

CHISHOLM'S HANDBOOK OF COMMERCIAL GEOGRAPHY

Thirteenth Edition. Entirely rewritten by
L. DUDLEY STAMP, B.A., D.SC., F.R.G.S.
With Maps and Diagrams. 25s. net.

A COMMERCIAL GEOGRAPHY

By L. DUDLEY STAMP, B.A., D.SC., F.R.G.S.
With Maps and Diagrams. 6s. 6d.

A
SMALLER COMMERCIAL
GEOGRAPHY

BY

THE LATE GEORGE G. CHISHOLM, M.A., B.Sc., LL.D. (EDIN.)

SECRETARY TO THE ROYAL SCOTTISH GEOGRAPHICAL SOCIETY,
FORMERLY READER IN GEOGRAPHY, UNIVERSITY OF EDINBURGH

AND

J. HAMILTON BIRRELL, M.A., PH.D., F.R.S.G.S.

FORMERLY LECTURER IN GEOGRAPHY, HERIOT-WATT EVENING COLLEGE,
EDINBURGH, GEOGRAPHY MASTER, BOROUGHMUIR SCHOOL, AND TUTOR IN
COMMERCIAL GEOGRAPHY, WORKERS' EDUCATIONAL ASSOCIATION, EDINBURGH.

LONGMANS, GREEN AND CO.

LONDON



NEW YORK



TORONTO

LONGMANS, GREEN AND CO. LTD.

39 PATERNOSTER ROW, LONDON, E.C.4
17 CHITTARANJAN AVENUE, CALCUTTA
NICOL ROAD, BOMBAY
36A MOUNT ROAD, MADRAS

LONGMANS, GREEN AND CO.

114 FIFTH AVENUE, NEW YORK
221 EAST 20TH STREET, CHICAGO
88 TREMONT STREET, BOSTON

LONGMANS, GREEN AND CO.

215 VICTORIA STREET, TORONTO

New Edition . . . 1939

*Printed in Great Britain at THE BALLANTYNE PRESS
SPOTTISWOODE, BALLANTYNE & CO. LTD.
Colchester, London & Eton*

NOTE TO THE EDITION OF 1923.

THIS edition has been entirely prepared for the press by Mr. Birrell, to whom I was greatly indebted in the preparation of the ninth edition of my Handbook of Commercial Geography, as stated in the preface of that work. In entrusting the work to him I had complete confidence not only on account of his long experience in the teaching of Geography both on a school and university standard, but also on account of what I have long known of his judgment, care, and industry.

In preparing this edition he has been able to make free use, so far as the limits of space allowed, of the last edition of the Handbook, and it will be observed that in this edition the abridged work has been considerably extended.

I have myself read the proofs, and these have also been read by Mr. Charles T. Macgregor, M.A., F.R.S.G.S., Boroughmuir School, Edinburgh, to whom also I was greatly indebted in the preparation of the last edition of the Handbook.

Owing to the economic chaos of the war years and those immediately following, the normal trend of commerce was completely disorganised, and for the young economic geographer no useful purpose would be served by examining that period. In any case trustworthy statistics are generally lacking. Similarly, although the post-war countries are described, a sufficiently long period has not elapsed for anything approaching a complete account of their commerce as measured by trade returns.

Town populations and variable statistics are given in round numbers as footnotes; the population figures are those of the latest available sources of information, generally from census returns.

GEO. G. CHISHOLM.

EDINBURGH UNIVERSITY,
December 1922.

PREFACE.

THIS text-book is in the main an abridgment of my Handbook of Commercial Geography. In making the abridgment I have endeavoured to retain as much as possible of the matter that seems fitted to present the leading facts of international commerce in such a way as to impress the memory. The description of countries is confined to features of importance in relation to commerce.

In place of the tables of imports and exports given in the larger book, paragraphs have been inserted in the text summarising the main facts to be learned from such tables. In these paragraphs attention is drawn to the principal features of the recent history of the commerce of all the more important commercial countries; the rise and fall in the trade in various commodities. Such particulars are mostly derived from the last issues of the Statistical Abstracts published by the Board of Trade, and relate to the periods embraced by these publications, ten or fifteen years, as the case may be. The comparisons are not made between the first and last years for which figures are given in the respective abstracts, but between groups of years, and always apply to quantities, unless values are expressly mentioned.

Like the larger book, this text-book is divided into paragraphs for the sake of making frequent cross-references. The references are made by printing the number of the paragraph referred to in thick type in parentheses, thus (245).

GEO. G. CHISHOLM.

LONDON, *March* 1890.

CONTENTS.

	PAGE
INTRODUCTORY EXPLANATIONS	1
COMMODITIES—CIRCUMSTANCES AFFECTING THEIR PRODUCTION AND CARRIAGE	3
COMMODITIES—THEIR CHIEF PLACES OF PRODUCTION	14
I. <i>Commodities Dependent upon Climate :—</i>	
A. Products of the Temperate Zone	14
B. Sub-Tropical Products	19
C. Tropical Products	21
D. Products of Various Climates	22
II. <i>Mineral Products</i>	26
III. <i>Manufactured Articles</i>	29
COUNTRIES OF THE EARTH :—	
<i>Europe</i>	31
British Isles	32
France	56
Belgium	62
Holland	65
Luxemburg	67
North Central Europe	67
(1) The German Realm	67
(2) Danzig	77
(3) Poland	78
The Alpine States	79
(1) Switzerland	79
(2) Austria	81
South-Eastern Europe	82
(1) Czechoslovakia	85
(2) Hungary	86
(3) Yugoslavia	87
(4) Roumania	88

	PAGE
Eastern Europe	90
Old Russia	91
Finland	95
Sweden and Norway	95
Spitsbergen	98
Denmark	98
Spain and Portugal	99
Italy	106
Malta	111
Fiume	111
Balkan Peninsula	111
(1) European Turkey	112
(2) Bulgaria	113
(3) Greece	114
(4) Albania	116
<i>Asia</i>	116
Countries outside of the Monsoon Region	116
Siberia	116
Russian Central Asia	120
Caucasia	121
Armenia	122
Kurdistan	122
Asia Minor	123
Syria	124
Cyprus	125
Mesopotamia	125
Arabia	126
Persia	127
Afghanistan	128
Baluchistan	129
The Monsoon Countries and their Dependencies	129
India	129
Ceylon	138
Indo-China	139
The Malay Peninsula	143
The Malay Archipelago	144
China	147
The Chinese Dependencies and Manchukuo	153
Japan	155
<i>Africa</i>	159
North Africa	160
Egypt	160
Western Mediterranean States	163

CONTENTS.

xi

	PAGE
Temperate South Africa	167
Cape Province	167
Bechuanaland	169
Natal	169
Basutoland	170
The Orange Free State	170
The Transvaal	171
Rhodesia	171
Territory of South-West Africa	172
Tropical Africa	173
Abyssinia	179
African Islands	179
<i>America</i>	180
North America	181
Greenland	181
British North America	182
United States	192
Mexico and Central America	204
West Indies	207
South America	209
Brazil	211
Colonial Guiana	212
Venezuela	212
Colombia	213
Ecuador	213
Peru	214
Bolivia	215
Chile	215
The Argentine Republic	216
Uruguay	219
Paraguay	219
The Falkland Islands	219
<i>Australasia and Polynesia</i>	220
The Commonwealth of Australia	220
The Australian States	225
Victoria	228
New South Wales	230
Queensland	231
South Australia	232
Western Australia	234
Tasmania	235
New Zealand	236
New Guinea	238
Melanesia	239
Polynesia	240

	PAGE
TRADE ROUTES	242
APPENDIX :—	
Colonial and other Possessions of European Powers . . .	263
Principal Units of Metric System	265
Railway Statistics	265
Table of Distances in Nautical Miles	266
Comparison of Suez and Panama Canals	266
Suez Canal Shipping	267
Panama Canal Shipping	268
Area, Population, and Exports of the Principal Countries and Commercial Islands of the World	268
Table of Shipping	270
Moneys of Account of Principal Countries	270
Rate of Exchange	272
INDEX	273

INDEX OF COMMODITIES.

	PAR.		PAR.
Alkali	85	Divi-divi	66
Amber	63	Dye-stuffs of vegetable origin	65
Animals, Domestic	44	Earthenware	84
Annatto	65	Esparto	82
Arrow-root.	58	Feathers	70
Asphalt	76	Fishery products	73
Barley	35	Flax	42
Beans	37	Flowers, Artificial	86
Beet	41	Fruits of the Temperate Zone	39
Bones	71	Fruits, Tropical	56
Chicory	41	Gambier	66
China grass	59	Gamboge	65
Cinchona	57	Glass	84
Coal	74	Gold	77
Coal-tar dyes	86	Graphite	79
Cochineal	65	Ground-nuts	62
Cocoa	53	Guano	79
Coco-nut oil	62	Gums	63
Coffee	52	Gutta-percha	60
Coir	59	Hemp	43
Colza.	62	Henequen	59
Copal	63	Hides	71
Copper	78	Hops	41
Copra	62	Indigo	65
Coral	69	Iron	75
Cork	67	Ivory	68
Cotton	47	Jute	59
Cotton-seed oil	62	Kauri gum	63
Cutch	66	Kerosene	76
Dammar	63	Lac	70
Dates	51	Lead	78

	PAR.		PAR.
Leather	81	Resins	63
Linseed	42	Rice	54
Locusts	37	Rubber	60
Logwood	65	Rye	36
Madder	65	Sago	58
Maize	33	Salt	79
Manganese	79	Sandarach	63
Manila hemp	59	Sesame	62
Meat	71	Silk	46
Meerschaum	79	Silk, Artificial	83
Mercury	79	Silver	77
Mohair	45	Spices	64
Myrobalans	66	Sponges	69
Nitrate of soda	79	Steel	75
Oats	34	Sugar-beet	41
Oil-cake	62	Sugar-cane	55
Oil-seeds	62	Sulphur	79
Oils, Vegetable	62	Sumach	66
Olive-oil	62	Tanning materials	66
Opium	49	Tapioca	58
Ozokerit	76	Tea	50
Palm-oil	62	Textiles	80
Paper	82	Timber	67
Paraffin-oil	76	Tin	78
Pearls	69	Tobacco	48
Peas	37	Tortoise-shell	61
Peruvian bark	57	Train-oil	72
Petroleum	76	Turpentine	62
Phosphates	79	Valonia	66
Platinum	79	Wax	70
Poppy-seed	62	Wheat	32
Potatoes	38	Wine	40
Precious stones	77	Wood-pulp	82
Pulses	37	Wool	45
Quicksilver	79	Yellow berries	65
Rape-seed	62	Zinc	78
Rattans	61		

A SMALLER COMMERCIAL GEOGRAPHY.

INTRODUCTORY EXPLANATIONS.

1. Commerce is the exchange of commodities or articles desired by man. In commercial geography the subjects chiefly considered are the place of production of such articles, and the routes and modes by which they are and may best be exchanged. Other matters are, however, frequently involved in the consideration of these subjects. Thus it may be necessary to inquire into the quality of articles. Articles of different quality are in fact different, though they may be entered in tables under the same name. Coal or iron ore of a good quality may be worked in situations in which an inferior coal or ore would not be worked. Further, the mode of production sometimes determines the place of production. Iron may be made from iron ores by modern cheap methods, though it cannot be made with profit from the same ores by old and dear methods.

2. Some of the articles exchanged in commerce are ready for their final use ; others are of use only to be worked up into other forms. Thus cotton, wool, and other fibres have to be worked up into yarns and cloths ; hides into leather. Such articles are called **raw materials**, and various articles, such as cotton, wool, sugar, hides, &c., are spoken of as “raw” when they are dealt with in commerce only after undergoing such simple treatment as they may easily be subjected to at the place of production.

3. Articles brought into a country are called **imports**, those

sent out **exports**. Articles are, however, frequently brought into a country and afterwards sent away to others (110). There is thus an important distinction between articles imported for use or consumption in a country (home consumption) and those which are re-exported. The term **general commerce** is applied to the commerce of a country in all articles whatever, the term **special commerce** usually to the import of articles for home consumption and export of articles produced in the exporting country. Among articles consumed in a country are included all those which are there worked up into another form. Raw cotton is used or consumed when it is made into cotton yarn, and is therefore one of the special imports of the country in which yarn is made from it, and that yarn, if exported, is one of the special exports of the country.

4. Unfortunately this distinction is not always observed. In some countries, for example, all articles that have paid duty on being imported are included as part of their special commerce. The published tables of the commerce of such countries, accordingly, do not enable us to compare their true special commerce with that of other countries.

5. The total value of the special exports of a country is generally nearly equal to that of the special imports. Commerce being an exchange, the exports are in fact the articles given in exchange for, or in payment of, the imports. When the imports are regularly much greater or much less than the exports, there are always special explanations of the fact, and in general these explanations come to this, that there may be an exchange of services as well as an exchange of material articles. For example, such a difference exists in the commerce of the United Kingdom to a greater extent, perhaps, than that of any other country. The value of the British imports for home consumption was, in 1926-30, more than one-half greater than that of the exports of home produce. Britain thus buys much more than it sells. But then the British have laid out vast sums of money in foreign countries. That is a service rendered to those countries, very often the means of producing material wealth in them. The interest and profits on that money accordingly enable Britain to buy more than it sells. Moreover, British ships carry a large share of the sea-borne commerce

of the world, and the freights earned by these ships represent to a large extent services for which other countries are indebted to Britain. And these are not the only explanations of the difference.

6. Though commerce is thus essentially an exchange of commodities for commodities, services for services, or services for commodities, yet the actual exchange usually takes place by means of money or the equivalent of money. **Money** is mostly in the form of coin or pieces of metal stamped for no other purpose than to serve as a measure of value. An order or a promise to pay coin may be used instead of it, and where the order or promise can be relied on—in other words, where credit is good—such order or promise is a complete equivalent for money. In uncivilised countries goods are frequently exchanged without the aid of money. Cotton-cloth may be exchanged for palm-oil (62), tobacco for coco-nut kernels (62). Such an exchange is called barter.

COMMODITIES—CIRCUMSTANCES AFFECTING THEIR PRODUCTION AND CARRIAGE.

7. **Climate.**—This is one of the most important factors in determining the production of commodities. All the leading British imports (114), for example, depend more or less on climate for their production. They are all derived either from plants or from animals that feed on plants, and the production of all such commodities is regulated to a greater or less degree by the amount of heat and moisture in the places where they are produced. There are, therefore, a few facts with regard to the distribution of heat and moisture over the globe to be carefully kept in mind in studying commercial geography.

8. **First, heat.**—On the whole, heat as registered by a thermometer, or what is called simply temperature, decreases from near the equator towards the poles, from lower elevations to higher. The chief modifying cause affecting the decrease of temperature polewards is the prevalence of winds blowing from warmer to colder latitudes, and more especially where the temperature of these winds is maintained by warm sea-currents. The vicinity of great bodies of water, and especially

the sea, has an equalising effect on temperature, but this effect is brought about solely through the agency of the winds, and therefore varies greatly with their direction. In the temperate zone the greatest variety of climate is experienced in the northern hemisphere, in which are the greatest land-masses belonging to that zone. The western parts of the two great land-masses of that zone have the most equable climate, because Europe, the western part of one of these land-masses, is exposed to mild south-west winds blowing over regions of the North Atlantic warmed by sea currents, and the corresponding part of North America is exposed to warm winds blowing in the same direction from the North Pacific. In the east of the two great land-masses in the same latitudes very hot summers alternate with very cold winters, because in both these regions the prevailing winter winds are more or less northerly and blow mainly from the land. These extremes of temperature, however, are greatest at some distance from the sea. In and near the tropics temperature over and near the sea is modified by the **trade-winds**, which always blow in some part of these regions more or less from east to west.

Mountains, by obstructing winds, have important effects on temperature, sometimes by protecting from cold winds, sometimes by shutting off the beneficent influences of warm ones. Where the atmosphere is dry and clear there is a great loss of heat during the night by radiation, and there are therefore great extremes of heat by day and cold by night in warm regions with an atmosphere of this kind.

9. Second, **moisture**.—The great source, in the first instance the only source, of moisture is the ocean. Hence, the farther inland a region lies the less chance has it generally of receiving an ample rainfall, unless there are special conditions favourable to the condensation of water-vapour. Condensation takes place through the lowering of the temperature, and one of the most frequently operative causes in bringing about that reduction of temperature is the presence of mountains, obstructing moisture-laden winds, and thus forcing them to ascend and become cooled through the expansion of the air. Consequently regions on the maritime side of the mountains often have a sufficient rainfall when those on the other side have not. In the tropics there is

generally a more marked distinction between rainy and dry seasons than in most parts of the temperate zone. This distinction is most noticeable in the monsoon regions, in which in winter the wind tends to blow from the land, and in summer (the rainy season) from the sea. The chief monsoon areas are the south-east of Asia and the north of Australia. In the east of Asia this alternation of dry and rainy seasons extends far into the temperate zone. Areas which lie on the west coasts of continents in latitudes 30° to 40° , that is, between the trade wind and westerly wind belts, have the largest percentage of their rainfall in autumn and winter, when the westerly wind belt is drawn equatorwards, following the apparent motion of the sun. Such a climate is termed **Mediterranean**, and is found in the region after which it is named, in California, U.S.A., in central Chile, in the area around Cape Town, and in the south-west of Australia.

10. Where adequate moisture does not fall as rain, it may in some places be supplied from rivers, lakes, wells, or artificial reservoirs. This artificial watering is called **irrigation** (256). In many parts of the world the structure of the ground is such that when holes are bored in the ground to a sufficient depth water will of itself rise to the surface. Such springs are known as **artesian wells**.

11. But irrigation is confined to very limited areas, and it seems probable that greater increase of production is likely to result from the practice of **dry farming**. By this is meant the treating of the land in such a way as to conserve the moisture which it contains by preparing the surface in the form of a mulch. A mulch is any covering of the surface that tends to protect the moist earth underneath against the direct rays of the sun. A dry, powdery, surface soil, obtained by the frequent use of the plough, harrow, and other implements of tillage, provides an excellent mulch. Dry farming is practised in the drier parts of India, southern Russia, United States, Canada, and South Africa.

12. A suitable climate is not all that is required for the production of vegetable commodities for commerce. Some commodities require much more labour than others to make them ready for the market, and these cannot be grown with

profit where labourers cannot easily be got in sufficient number. For example, the climate of the United States is in many places well suited for the tea-plant, and many of the farmers of that country grow a little tea for their own use. But there is hardly any tea grown in the United States for sale, for the tea-leaves require a great deal of preparation before they can be sold, and the American farmers cannot obtain workers so cheaply as can tea-planters in India, China, and other parts in Asia, where there are multitudes of labourers who work for very low wages. Often not cheap workers, but highly skilled workers, are what is wanted for commercial production. Under this head may be included those who display manual dexterity and intelligence in manufacturing and other operations, and highly educated persons qualified to direct the operations of production and distribution.

13. Further, the production of commodities for commerce depends to a great extent on the cost of land and such natural agents of production as are capable of appropriation; for example, coal and water-power. In England, and in populous countries generally, land is dear. An English farmer, therefore, cannot afford to grow wheat at the same price as a farmer in certain parts of Canada or the United States, for example, where the inhabitants are still few and land is very cheap. To make wheat-growing profitable an English farmer must get about thirty bushels of wheat to the acre¹ or more, and to get this amount of produce he must buy expensive manures. In parts of the United States, Argentina, and elsewhere, the farmer can afford to let two or even three acres yield altogether no more produce, and to sell that produce at the nearest railway station at perhaps three-fourths of the price that an English farmer gets for the same amount at his market town.

14. On the other hand, in England coal is cheap, and since power-driven machinery has been largely used in manufactures, that has been a great advantage to this country. Other countries are rich in other forms of fuel—petroleum, natural gas, &c.—others in water-power.

15. In recent years power has come to be very extensively applied by means of electricity. This has in many cases greatly

¹ An acre is about seventy yards square. A bushel of wheat generally weighs rather more than 60 lbs.

facilitated the use of water-power, and thus increased the advantages of countries in which waterfalls and rapid rivers abound. But electricity is in some ways an advantage even where coal is burnt in order to develop it. Though there is a loss of energy in converting the power latent in coal into the form of electricity, yet electrical power can be transmitted to a distance with less loss than steam-power. This leads to several economies. The coal can be used to develop electrical energy where it is cheapest. It can be used for that purpose in one great establishment on a large scale, instead of in many places on a small scale ; and in the end each one who uses the power can take for his requirements just as much as he needs and when he needs it. Electrical power can be turned on like gas for lighting. Thus one gets rid of numerous steam-engines, each of which required its own attendants, and had to be kept ready for work at the cost of fuel, even at times when there was no work for it to do. See foot-note to par. 172.

16. Countries in which land is cheap are those to which the great streams of emigrants are now directed. They are mostly countries that have received a civilised population only in modern times, and which are hence known as new countries.¹ Among the countries from which emigrants proceed the British Isles long took the lead.² British, German, and Scandinavian

¹ Average number of immigrants in thousands :—

Period.	United States.	Canada.	Argentine Republic.
1881-1890	545	162	80
1901-1910	880	145	99
1926-1930	281	146	83

Of the 242,000 immigrants into the United States in 1930, 22,500 were Italians, 90,000 were Canadians, 54,500 were British, and nearly 7000 were Scandinavians. The number of immigrants into the United States has been restricted since 1924. Of the 88,200 immigrants into Canada in the same year 27,500 came from the British Isles, 24,300 from the United States. In the case of the Argentine Republic emigrants have been deducted from immigrants. Italy, Spain, and other countries of southern Europe supply most of the immigrants into the Argentine Republic.

² Average number of emigrants in thousands :—

Period.	United Kingdom.	Germany.	Italy.	Spain.
1881-1890	256	118	99	67 (1883-90)
1901-1910	284	28	364	• 109
1926-1930	139	54	90	46

Italy has restricted emigration since 1927.

emigrants go chiefly to the United States, Canada, and the Australasian Colonies. Large numbers of Italian emigrants go to the Argentine Republic, three-fifths of the settlers in which are Italians; and there is now also a large flow of Italian emigration to Brazil and the United States. Down to 1867, inclusive, the Irish predominated among the emigrants from the British Isles, but since that year the English, as distinguished from Scots and Irish, have been the most numerous emigrants from the United Kingdom. Of late years they have made up three-fifths of the whole number. From Asia the chief emigrants are the Chinese, who go in considerable numbers to various tropical countries. Chinese and Indian labourers go under contract (as coolies) for terms of years to work in many tropical and sub-tropical plantations or in mines. Formerly there was a considerable free emigration of Chinese to the United States and the temperate parts of Australia, but this has been wholly or greatly checked by the governments of the countries to which these emigrants proceeded.

17. In new countries the leading products are for the most part those of agriculture. Sometimes they include some of the more valuable minerals. The surplus of such products is exported in exchange chiefly for manufactured articles of all kinds, together with varying proportions of sugar, tea, coffee, tobacco, &c., if the countries referred to do not themselves produce these articles, or do not produce them to any great amount.

18. The cost of carriage is a fourth circumstance which greatly affects the production of commodities. Wheat is sometimes carried by rail and by sea a distance of more than 15,000 miles, and then sold at a profit. On the other hand, before the introduction of railways into Japan, rice could not be carried to market with a profit more than a hundred miles on the best country-roads. Sea-carriage is always the cheapest. In 1885 the cost of carriage of a quantity of raw cotton from Bombay to Liverpool, a distance of 7150 statute miles, was only about seven times as much as the cost of carrying the same quantity from Liverpool to Oldham, a distance of 39 miles.¹

19. The means and the cost of transport differ greatly in

¹ In September 1922 the cost of carriage of raw cotton from Bombay to Liverpool was only slightly greater than that from Liverpool to Oldham.

different parts of the world. Human porters are now employed chiefly in central Africa. Beasts of burden carrying pack-saddles are in much more general use. The most important of these are oxen, horses, asses, and mules. Asses and mules are employed mainly in the warmer parts of the temperate zone, and mules in particular—animals remarkable for their endurance and sureness of foot—are the typical beasts of burden in mountainous countries, where the climate is at least moderately warm and dry. Llamas are employed in the Andes, yaks (a kind of oxen), and even sheep in the Himalayas and other Asiatic mountains. The camel is well known as the indispensable beast of burden in desert plains, but it is sometimes used even on mountainous routes. A native of Asia, it has long been introduced into the deserts of Africa, and more recently into western North America and Australia. Of all beasts of burden in ordinary use it bears the heaviest load. Yet the average load of the single-humped camel is only about 450 lbs., that of the two-humped camel of central and eastern Asia about double that. A camel-caravan consists of from one to ten thousand camels, but the total load transported is not great. The elephant carries a much heavier load than the camel, but no animal requires so much food in proportion to the work done by it. Nevertheless, it is of great value in certain regions, as in marshy tropical forests, where no other animal can be used.

20. When employed to drag wheeled vehicles animals can transport a much greater weight than when the loads are carried. In certain regions with a very dry climate, where the ground is accordingly hard, vehicles can be used even where there are no roads. Bullock-wagons, sometimes with a score or two of bullocks in a team, are so employed in South Africa and Australia. In South Australia camels also are used in harness. In the Arctic Regions reindeer and dogs are employed to draw sledges.

21. Immense improvements in transport have been made in modern times. The first were in navigation. The science of navigation has been so much advanced, and the instruments for taking the observations necessary in navigation have been so much improved, that the course of a vessel can be laid down with much more precision than formerly. The winds and

currents of the ocean are now better known, and are regularly taken advantage of wherever possible. In voyages from Europe to the West Indies or the Gulf of Mexico vessels first take a southerly course to get into the region of the trade-winds (8) as soon as possible, so as to be helped by them in their voyage westwards. In their return voyages they take first a more northerly course, so as to get as soon as possible the help of the prevailing south-westerly winds (8). Sailing vessels proceeding to New Zealand, after traversing the Atlantic Ocean, make for the latitudes in which the westerly winds of the southern hemisphere prevail ("the roaring forties," between 40° and 50° S.), and having reached New Zealand, they make the return voyage by Cape Horn, towards which they are driven by the same winds.

22. The nineteenth century gave birth to the greatest improvements in locomotion that the world has seen. Road-making was improved at the end of the eighteenth century and the beginning of the nineteenth century by two Scotsmen, Telford and Macadam. In 1807 the first steam voyage in every respect successful was made on the Hudson River, New York, by Fulton. In 1825 the first steam railway was opened (between Stockton and Darlington in England). The period since then has been pre-eminently a railway-making era almost all the world over. A table in the appendix shows some instructive differences that now exist in the proportion of railways to population in different countries. The improvements in locomotives and marine engines have been going on constantly, leading to increased speed, and some of the most important to increased speed at a smaller cost of fuel. Steamers have been greatly enlarged. Some are now built of more than 50,000 tons burden. Some attain a speed of more than twenty miles an hour. Further, ocean routes have been shortened by the construction of ship-canals of the highest importance, namely, the Suez Canal, opened in 1869, and the Panama Canal, opened in 1914. In consequence of these changes a single vessel can take to India and back from it in eight or nine weeks as much cargo as, three hundred years ago, it would have required a single vessel eleven or twelve years to carry to and from that country.

23. The increased speed and reduced cost of ocean transit

have rendered possible a trade in certain products that could not formerly be carried great distances; for example, a trade in fresh tropical fruits (56). Improved processes of preserving have helped to bring about the same result. The most important of these are the processes for preserving meat for three months or more by cold air (refrigeration), so that fresh mutton and beef can be conveyed to England from New Zealand, Australia, and the Argentine Republic.

24. The development of **motor vehicles**, which have the advantage of being able to use the ordinary roads, may promote a considerable amount of redistribution of manufacturing and perhaps also agricultural industry. Within a radius of 50 miles they can compete successfully with the railways for the transport of certain classes of goods and have the advantage of being able to collect the goods at the place of production and deliver them direct to the consumer.

Air transport is now fairly established, especially for mails and the conveyance of passengers and costly goods of small bulk.

25. In connection with the cheapening of transport, the improvement of the **post** and the invention of the **electric telegraph** may also be noticed. The inland penny post was first introduced, in England, in 1840. The international postal union, which now embraces nearly all the civilised countries in the world, had its origin in 1874. The year 1840, that of the first penny post, was also that in which the first electric telegraph was laid over a length of more than four miles. In 1851 was laid the first permanently successful **submarine electric cable** (between Dover and Calais), and in 1866 the first permanently successful cable across the Atlantic (from Valentia in Ireland to St. John's, Newfoundland). There are now numerous cables across the North Atlantic (from the south-west of Ireland, the south-west of England, and Brest in Brittany to Newfoundland, Miquelon, and Nova Scotia). There are cables from Lisbon by Madeira and the Cape Verde Islands to Pernambuco in Brazil. Submarine telegraphs have also been laid along the bottom of the Mediterranean, along both sides of Africa to Cape Town in the west and Durban in the east, touching at the chief ports on each side. Durban is also connected in the same way with Mauritius, the Cocos Islands, and Fremantle, Madras with

Singapore, and then by Java with Port Darwin in Australia (578). In November 1902 the first Pacific cable was completed, connecting Vancouver by Victoria, B.C., Fanning Island, the Fiji Islands, and Norfolk Island with Auckland (New Zealand) and Brisbane (Queensland). Another Pacific cable now connects San Francisco by Honolulu and Guam with Manila, Celebes, and Shanghai. Wellington (New Zealand) communicates in the same way with Sydney. Wireless telegraphy, often previously experimented with, has been rapidly developing since the beginning of the twentieth century. Now all large and most small vessels, airships and some aeroplanes are provided with wireless apparatus, and it is possible to construct wireless stations capable of communicating with all the great cities of the world.

26. The chief effects of telegraphs in cheapening commerce are these. First, without the electric telegraph to signal the movements of trains, it would probably be impossible to carry on the amount of traffic maintained on the busier railways. Second, the electric telegraph prevents the necessity of keeping large stocks in store. Third, it reduces the risk of loss through fluctuations in prices.

27. In reading the dates of telegrams from a distance it must be remembered that for every 15 degrees of longitude there is a difference of one hour in time, one hour earlier for places to the west, one hour later for places to the east. The following list gives the time at various places east and west of Greenwich when the Greenwich time is noon :—

	A.M. H. M.		P.M. H. M.
Honolulu	1 29	Paris	0 9
Vancouver	3 48	Berlin	0 53
San Francisco	3 50	Cape Town	1 14
Denver	4 59	Petrograd	2 1
Mexico	5 23	Aden	3 0
St. Louis	5 59	Bombay	4 51
New York	7 4	Calcutta	5 54
Buenos Aires	8 7	Singapore	6 55
St. John's, Newfoundland	8 29	Hong-Kong	7 37
Bahia	9 26	Adelaide	9 14
Funchal, Madeira	10 43	Sydney	10 5
Lisbon	11 23	Wellington	11 39
Madrid	11 45	Suva, Fiji Islands	11 54

It may be noticed that there is a difference of nearly $22\frac{1}{2}$ hours in time between Honolulu and Suva. The difference in longitude between these two places is, however, less than 25 degrees. The apparent difference in time is due to the fact that the date is determined at Greenwich.

28. Taxes imposed by governments in one form or another may also have a great influence on the amount of certain commodities produced for commerce. The most direct effect of this kind is due to the imposition of customs duties on imports ; on some manufactured articles imported into the United States a duty equal to as much as 60 per cent. of the price of the article is charged. This duty has to be paid by the importing merchant, and he expects to obtain the same profit on what he thus lays out as on what may be called the natural price of the article. Nations are said to follow a **free trade** policy when no duties are levied on imported articles, unless equivalent duties are laid on the same articles produced in the country, if they are produced there at all. Countries levying import duties in order to protect native products (including manufactures) against foreign competition are said to follow a **protectionist** policy. In the framing of commercial treaties it is frequently stipulated that the countries contracting the treaty should each be put on the footing of the **most favoured nation**, so that any relaxation of duty granted by one of the countries is at once enjoyed by the other. For preference in the British Empire see pars. 413, 469, 577.

29. Production is likewise greatly affected by the character of the government. In no part of the world can commodities be produced to the utmost extent possible unless order is maintained and justice administered.

30. Many other conditions influence the production of mercantile commodities, but these six, climate, labour, land and natural agents of production, transport, taxation, justice, are the most important. All of them affect the products of the vegetable kingdom direct and indirect, and all except the first have an influence on the production of commodities of all kinds. Climate generally exerts only an indirect effect on the production of manufactured articles and minerals, where there is any effect due to this cause at all.

31. Of the six circumstances just mentioned as regulating production to a greater or less extent, climate is that which is least subject to change. Great changes in the place of production of the more important commodities, except minerals, are therefore generally due to changes relating to one or more of the remaining five. Where machinery can be employed to replace labourers, the introduction of machinery is one of the most important causes of such changes. In the case of minerals, a change in the principal seat of production may be due to the exhaustion of deposits in one place or new discoveries or new workings in others. Where production depends on machinery wrought by mineral fuel, the exhaustion of the supplies of fuel in one place, or new discoveries or new workings of that fuel in others, have also a great effect on the production of the articles made by such machinery.

COMMODITIES—THEIR CHIEF PLACES OF PRODUCTION.

1.—COMMODITIES DEPENDENT DIRECTLY OR INDIRECTLY ON CLIMATE.

The articles enumerated below are not confined to the regions under which they are entered. Maize, for example, is grown throughout the tropics. The articles are, however, entered as belonging to the region in which they are produced in greatest amount for commerce on a large scale. Almost all the maize of commerce is grown in the temperate zone, and not in its warmest parts, but between about 36° and 46° N. It is important to remember that most of the products here mentioned may be met with in any country belonging to the zones under which they appear. Their enumeration under the different countries is therefore needless.

A.—PRODUCTS OF THE TEMPERATE ZONE.

32. Wheat thrives best in a moderately warm climate with a rather dry summer. For many years the area under this crop in the British Isles (100) and some other countries has been,

or the whole, declining, owing to a rapid fall in prices. Wheat is now chiefly grown for export in the Dominion of Canada, the United States, India, Russia, Hungary, the Argentine Republic, Uruguay, Roumania, and the Australian Commonwealth; but the only parts of North America where there has been a great increase in the amount cultivated for export are some of the western states of the United States and the prairie provinces of Canada.

Average Annual Production of Wheat in Millions of Bushels, generally in 1921-1930.

United Kingdom.	France.	U.S.S.R. (1926-30)	Austria.	Hungary.	Germany.	Italy.
55	279	850	10	70	111	210
Roumania.	United States.	Canada.	Argentina.	India.	Australia.	
100	830	400	227	333	141	

Average Yield of Bushels per Acre (1921-5)

	Bushels.		Bushels.
England	34	Russia	10
Belgium	39	India	11
France	22	United States	13
Germany	27	Canada	17
Hungary	18	Argentina	13
Italy	17	Australia	13

33. Maize requires a long summer with frequent rain or artificial watering; grown most extensively in the United States, but chiefly used in that country for the feeding of swine and other animals; imported into the United Kingdom principally from Argentina, the United States, and Roumania.

34. Oats succeeds best in a colder climate than that best suited for wheat; chiefly grown in northern Europe, Canada, and New Zealand; it forms the best food for horses.

35. Barley.—The finest quality is grown under the same climate as that best adapted for wheat, but there are many varieties, one of which is grown farther north than any other grain-crop (in Norway, beyond latitude 70° N.); imported into the United Kingdom most largely from Russia and the countries round the Mediterranean; chiefly used for making beer and whisky.

36. Rye.—The principal bread-plant in central and eastern

Europe, but very little cultivated in the United Kingdom, and not very extensively in the United States.

37. Pulses.—The most important of these in commerce are peas, beans, and chick-peas. **Peas and beans** are largely imported into the United Kingdom, soya beans for cattle food and as a source of oil chiefly from China. **Chick-peas** are extensively grown in Spain and India, and are important in the commerce of Spain with the larger West Indies, being a favourite food with Spaniards. **Locusts**, the pods of the carob-tree, are exported from Cyprus and elsewhere to be used as food for cattle, and for other purposes.

38. Potatoes.—Introduced from South America; very extensively grown in Ireland and eastern Germany; too bulky to bear the expense of very long transit, but early potatoes are largely imported into the United Kingdom from the Channel Islands, and even Malta. They are also largely exported from Algeria.

39. Fruits.—**Apples** imported into the United Kingdom chiefly from North America; **plums and prunes** from France; southern fruits chiefly from the Mediterranean peninsulas. The principal southern fruits are **oranges** from Sicily, Spain, and Portugal; **lemons** from Sicily and other parts of Italy, which furnishes also candied peel (orange, lemon, and citron); **figs** from southern Italy, Smyrna, and Greece; **grapes** from Spain, Portugal, and France; **raisins** (dried grapes) from Spain and Asia Minor, sultana raisins being made from a seedless grape grown on the eastern seaboard and some of the islands of the Ægean Sea; **currants** (a smaller dried grape) from Greece; **almonds** from the Mediterranean. Oranges and raisins are now largely produced in California, Australia, and South Africa.

40. Wine.—France takes the leading place in the production, export, and import of this commodity¹ (146, 149). Australian, especially Victorian, wines are rising in favour, and Californian wines have long been in good repute. The vine thrives best in the warmer countries suited for wheat. It can stand drought (thanks to its deep root, which enables the plant to obtain

¹ Annual production in millions of gallons :—

	France.	Italy.	Spain.	Algeria.	Germany.
About 1880 .	940	600	485	8	80
1930 .	1004	799	401	299	62

moisture far beneath the surface). It can also stand severe winter frosts, but requires a long autumn, and does not thrive with frequent summer rains. It is therefore unsuited to the monsoon countries (9). See also 175, 257, 268, 282, 304, 405, 417, 574.

41. Hops.—Require a very rich soil; chiefly grown in the S.E. of England, Germany (Bavaria), Czechoslovakia (Bohemia), and the United States (New York and California); used in making beer.

Beet.—One variety, called **mangold** or **mangel-wurzel**, largely grown as cattle-food in the E. of England and elsewhere; another variety, the **sugar-beet**, cultivated to a much greater extent on the mainland of Europe for the sake of the sugar obtained from it. It is the chief rival of sugar-cane.

Chicory.—A plant used where grown as a fodder crop and in salads, but the chief commercial product from which is the roasted and ground root, used for mixing with coffee; grown chiefly in France, Belgium, Holland, and central Germany; imported into the United Kingdom mainly from or through Belgium.

Olive-Oil.—See 62.

42. Flax.—A crop valuable both for its seed (**linseed**) and the fibre obtained from its stem. It is grown in India and other warm countries, including the United States, chiefly for its seed, from which the best of drying oils (used by painters, &c.) is obtained. The fibre of such flax is of little value. Good flax fibre is produced mostly in the colder parts of the temperate zone, most largely in Russia and the north of Ireland. The best quality of flax, however, is produced in Belgium (156). Various processes are necessary to free the fibre from the stem. In the United Kingdom the principal uses of the fibre are in making sailcloth and table-linen.

43. Hemp.—A crop that yields, like flax, one product in warm countries, another in colder ones. The fibre, the product in colder climates, principally used in making cordage. The name is also applied to fibres obtained from other plants than the true hemp, but used for the same purpose. In India the hemp-plant is grown chiefly for the sake of certain stimulants it yields.

44. Domestic Animals.—In northern and western Europe, and in most new countries, the principal domestic animals are horses, sheep, and cattle; but in the Mediterranean countries, asses, mules, and goats are reared in exceptionally large numbers, and in the United States enormous numbers of swine are cheaply fed on maize. Relatively to the population, the greatest numbers of domestic animals are found in new countries, and more particularly in the most recently settled portions of these. Whereas in the United Kingdom the number of sheep is equal to less than one per head of the population, that of cattle less than one in three of the population, and that of horses equal to only about one in twenty of the population, in Australia, New Zealand, the Argentine Republic, and Uruguay the number of sheep per head is between five and twenty, and the number of cattle from two to ten per head, and even the number of horses in some cases equals that of the inhabitants.

45. Wool.—Obtained mainly from the sheep, but also from the camel, from the alpaca and vicuña of the Andes, the Angora goat, and other animals. The sheep producing the finest wool flourishes best in a warm, temperate, but dry climate. Sheep generally thrive on pastures that are not very rich, and they require little attention, except at shearing-time, but a large extent of ground is necessary for their support. The Australasian lands, the Argentine Republic, and the Cape Province yield most wool for export. Spanish wool was formerly famous. Some German wools (175) still are so. English wool has special qualities that have caused it to be much sought after on the mainland of Europe for centuries. Wool has always to be freed from a large but variable amount of grease (yolk) and dirt before it is ready for spinning and weaving. When scoured it is called clean wool. The Angora goat takes its name from a town in Asia Minor. It yields a lustrous wool of great value called mohair, for the sake of which it has been introduced into the Cape Province, Australia, and elsewhere.

46. Silk.—The product of a worm, or more properly the caterpillar stage of a moth. The best is that obtained from a "worm" that feeds on the leaves of the mulberry tree. The rearing of the silkworm, and the preparation of the silk for

consequently carried on only where wages are very low, chiefly in China, Japan, India, the north of Italy, and the south-east of France. Indian silk is mostly obtained from the caterpillars of "wild" moths; that is, moths not reared for the purpose of yielding the fibre. This is known as tussur silk. Silk, after being unwound from the cocoons by the process of reeling and made into hanks, is known as "raw silk" (2). The silk that cannot be reeled off in this way enters into commerce as "knubs," "husks," or "waste silk." Formerly it was actually a waste product, but it is now spun by special machinery. Silk fibres slightly twisted so as to form yarn for weaving are called thrown silk. Just before the late war the percentage supply of raw silk in the markets of Europe and America came from China, upwards of 40, Japan, about 20, Italy, under 20, Turkish Empire, about 6, France, about 3, Austria-Hungary, the Caucasus, and Persia, each less than 2.¹

B.—SUB-TROPICAL PRODUCTS.

Under this head are entered products of the regions near the outer limits of the torrid zone, whether within that zone or outside it, or grown at high elevations in lower latitudes.

47. Cotton, the cheapest of all fibres used in spinning and weaving fine fabrics. It grows round the seeds within the fruit (boll) of the cotton bush, and is ready for the spinner as soon as it is picked and freed from the seeds. From 100 to 400 pounds of cotton, and often more, may be got from an acre of land, but the amount of clean wool got from sheep feeding on the same extent of land probably does not exceed 5 pounds. Sheep, however, are generally reared on land that is fit for little else; whereas cotton is grown on land that might be used for many other purposes.² The cotton-plant requires a long warm

¹ In 1930 the world's production of raw silk was about 120,000,000 lbs., of which the Far East supplied 87 per cent., France, Italy, and Spain 9 per cent., the U.S.S.R. 3 per cent., and the Levant 1 per cent. (Cf. p. 30.)

² Average price of imports in pence per lb. :—

	1900	1913	1920	1930
Raw cotton . . .	5·59	7·79	31·61	8·6
Raw wool . . .	9·47	10·26	24·09	13·0

summer free from frost, with a fair amount of rain, or the means of irrigation. It is grown in all parts of the tropics, and more extensively in countries bordering on the tropics. Special efforts are being made to stimulate cotton growing in the British Empire.¹ It is exported chiefly from the United States, India, Egypt, and Brazil.² See also 62.

48. **Tobacco**, another crop very easily injured by frost, which is very destructive to the young plants. Its cultivation extends into cooler climates than that of cotton. The United States yield the greatest amount, but the better qualities are obtained from tropical countries (Cuba, the Philippine Islands, Borneo, Sumatra, &c.).

49. **Opium**, the dried juice obtained from the seed-vessels of a kind of poppy. It is largely cultivated in India and exported to China. In 1911 the Government of India agreed to stop the export entirely in 1917, or earlier, if proof were given of the absence of native-grown opium in China, but the trade still goes on.

50. **Tea**, the dried and otherwise prepared leaves of a shrub allied to the camellia, grown in China, Japan, India, Ceylon, Java, and elsewhere, generally on hill-slopes. The cultivation is rapidly increasing in India, and still more so in Ceylon, where coffee plantations have for the most part been replaced by those of tea. In 1888 England, the chief market for tea, first imported a greater amount from India and Ceylon than from China (373).

Oranges, Lemons, &c. See 39.

51. **Dates**, imported into Europe from Algeria, Morocco (Tafilet dates), Egypt, Mesopotamia (Bussorah dates), and Persia.

¹ Exports in millions of lbs. :—

	British E. Africa.	British W. Africa	British W. Indies.
1913	11.2	6.2	3.0
1926-1930 (average) .	23.8	13.7	2.2

² Of the raw cotton imported into the United Kingdom the proportion per cent. derived from the chief countries of origin was as follows :—

	United States.	India.	Egypt.	Brazil.	Peru.	British Empire.
1886-1888	75	12	9.5	2.7	...	...
1913	73	2.4	18.5	2.8	1.8	3.3
1930	48	11.1	16.5	5.3	6.6	16.8

C.—TROPICAL PRODUCTS.

52. Coffee, the prepared seeds ("beans") extracted from the berry of a tree which is grown on hill-slopes at a lower elevation, or in warmer latitudes, than tea; grown, like tea, only where the labour required for the preparation of the seeds is sufficiently cheap (12). Chief places of production in order of importance: Brazil, Central America, Colombia, the Dutch East Indies, the West Indies, and India. It is grown also in many other tropical countries. Brazil furnishes about two-thirds of the production of the world; Central America the best quality.

53. Cocoa, a substance obtained from the seeds of the cacao-tree, a tropical American tree quite different from that which yields the coco-nut. It stands, and requires, a greater heat than the coffee-tree. Chief places of production in order of importance: Gold Coast, Brazil, Ecuador, the island of St. Thomas in the Gulf of Guinea, Trinidad, Venezuela, Ceylon, Java. It forms the favourite drink in Spain.

54. Rice, grown chiefly in those parts of the monsoon region of Asia where there is a very abundant rainfall or plenty of water for irrigation, for the growing plant has to be immersed in water for days. It is grown also in north Italy, the United States, and elsewhere; exported to Europe chiefly from Lower Burma, also from Japan, Cochin-China, and Siam.

55. Sugar-cane, a kind of grass with a thick stem rich in sugar, grown on low-lying, generally swampy, ground in the tropics, and in certain places beyond the tropics (the south of Spain, Louisiana in the United States, the extreme north-east of New South Wales, &c.).

56. Tropical Fruits.—Of these there is a great abundance and variety, but the chief international trade under this head consists in the export of **bananas** from the West Indies and other parts of tropical America to the United States (23), and the export of **pine-apples**, either fresh or tinned, from many places in and near the tropics to many temperate countries.

57. Cinchona or Peruvian bark, the bark of certain trees, natives of the Andes, but now grown on hills in India, Ceylon,

Java, and elsewhere. The bark yields quinine and other medicines highly valued as remedies for tropical fevers.

58. Tropical Farinaceous Products.—**Sago**, one sort chiefly derived from the Eastern Archipelago (363); another sort from the West Indies. **Tapioca**, mostly imported from the East and West Indies. **Arrow-root**, from various plants and various parts of the tropics.

59. Tropical Vegetable Fibres.—**Jute**, the fibre obtained from a plant grown in Bengal and used in making sacking; the finer fibres, often in combination with other fibres, in the making of various other fabrics, even plushes and velvets. **Henequen** or sisal hemp, a fibre obtained from Mexican plants, grown chiefly on the peninsula of Yucatan, but now also in East Africa and other parts of the world, very largely employed in the United States in making twine and sacking. **Manila** hemp, a product of the Philippine Islands, from which cordage of great tenacity and endurance is made. **China grass**, a plant of the nettle family, from which an excellent fibre for spinning and weaving is derived, but only with great labour. The plant is easily grown in all warm countries, and its fibre would probably be one of the cheapest of all, if a good machine could be devised for extracting it from the stem. Such a machine is in use (1820) in Yorkshire. **Coir**, the fibre from the outside of the coco-nut.

60. Rubber, a coagulated juice obtained commercially from two tropical trees, natives of Brazil; now grown on plantations in lands with a similar climate. The Malay States, Dutch East Indies, and Ceylon yield about 90 per cent. of the supply. **Gutta-percha**, a similar juice, obtained chiefly from East Indian trees.

61. Rattans, the slender stems of certain palms which grow in tropical lowlands. They are exported for use in the making of various kinds of wickerwork (chair-bottoms), &c.

Tortoise-shell, from tropical waters generally; the best from the Eastern Archipelago.

D.—PRODUCTS OF VARIOUS CLIMATES.

62. Vegetable Oils, Oil-seeds, and Oil-cake.—**Olive-oil**, derived from the fruit of a tree grown chiefly in the Mediterranean region, the south of France, Tunis, and Tuscany in Italy

yielding the best. The oil is also produced to a considerable amount in California. **Cotton-seed oil**, largely made in the United States, and also in England from seed imported from Egypt; much used to adulterate olive-oil, from which it can scarcely be distinguished; also used to adulterate lard. **Linseed**, see 42. **Rape-seed** and **colza**, the products of different species of cabbage. **Sesame**, the seed of a herb cultivated in India, the Mediterranean region, &c. **Poppy-seed**, exported from India, chiefly to France. **Ground-nuts**, the pods of a tropical plant, so called because they ripen underground; largely imported into France, chiefly from West Africa. **Palm-oil**, derived from the fruit of a palm which grows in Upper Guinea and the Congo basin. **Coco-nut oil**, derived from the kernels of the coco-nut palm, which grows on all tropical coasts. The dried kernel enters largely into commerce under the name of **copra**. **Oil-cake**, used in fattening cattle, is the name applied to the masses of crushed seeds that remain after the oil has been pressed out of them. The so-called **spirit of turpentine** is a light oil obtained from the resin of firs, pines, and other similar trees; imported chiefly from the United States. Vegetable oils are used for various purposes, but those which enter most largely into commerce are being increasingly used in soap-making and the manufacture of butter substitutes, **petroleum** (76) being used in place of them for lighting and the oiling of machinery. See also 72.

63. **Resins** are certain extracts from the tissues of plants, distinguished by being insoluble in water, but soluble in such oils as spirit of turpentine. The most important commercially is **rosin**, which is used in paper-making, soap-making, &c., and is largely exported from the United States. Finer resins are used, among other purposes, for making varnishes. Among these are **dammar**, the product of an East Indian tree; **kauri gum**, from a New Zealand tree; **sandarach**, from a North African tree; **copal**, obtained from various trees growing in different parts of the tropics. **Amber**, which is used for many familiar purposes, is the resin of a tree long since extinct; obtained in East Prussia.

Gums resemble resins, but differ in being soluble in water. The best gums are derived from the east of the Sudan (446).

64. **Spices and Condiments**.—**Pepper**, from southern India

and other parts of the East Indies. **Cayenne pepper** and **chillies**, both derived from a plant now grown in many tropical countries. **Ginger**, also tropical. **Cinnamon**, mainly from Ceylon; **cassia** mainly from China, but also from many other parts of eastern Asia. **Cloves** now grown in many tropical countries; **nutmegs** in several parts of the East Indies. **Pimento** or **all-spice**, from Jamaica. **Vanilla**, from Mexico, Réunion, Mauritius, &c. **Mustard**, **fennel**, **caraways**, &c., all European.

65. Dye-Stuffs of Vegetable Origin.—Many are exported in the form of wood, these being mainly from tropical trees; the most important, **logwood**, from Jamaica and elsewhere. **Indigo**, a blue dye, made in India and elsewhere from a cultivated plant; production has greatly declined since the introduction, about 1900, of a German synthetic indigo dye. **Cochineal**, a red dye from an insect reared chiefly in the Canary Islands. **Madder**, a red dye from a plant grown in Holland, France, Turkey, and elsewhere. **Cochineal** and **madder**, and in recent years also **indigo**, are rapidly declining in commercial importance in consequence of the increasing use of coal-tar dyes (86) in their stead. **Gamboge**, from the Eastern Peninsula and Eastern Archipelago. **Yellow berries**, from a shrub belonging to Asia Minor. **Annatto**, from a tropical American tree.

66. Tanning Materials.—The most important of these are **barks**, principally oak-bark, larch-bark, the bark of the hemlock spruce (much used in North America, and exported thence), and the bark of certain acacias. Most tanning bark imported into Britain comes from Natal, where it is derived from a species of acacia (wattle). Like **quebracho** bark from the Argentine Republic, it is exported chiefly in the form of extract. Among others are **myrobalans**, the fruit of two Indian trees; **sumach**, the powdered leaves and young twigs of a Sicilian shrub; **valonia**, the acorn-cups of an oak belonging to Asia Minor and Greece; **divi-divi**, the pods of a South American tree (now grown also in other tropical countries); **cutch** (or **catechu**), an extract from an Indian acacia; **gambier**, a similar extract from a shrub belonging to the Malay Peninsula and the Eastern Archipelago. **Cutch** and **gambier** and many other tanning materials are used also in dyeing.

67. Timber.—The timber of commerce (pine-wood, fir-wood,

&c.) is mostly derived from sparsely inhabited regions in the colder parts of the temperate zone and from mountain slopes or barren soils in lower latitudes. Norway, Sweden, Russia, and North America supply the bulk. **Cabinet woods** are mainly of tropical origin, though walnut, maple, and others are obtained from Europe and temperate North America. **Mahogany** is chiefly derived from West Africa, the West Indies and Mexico; **teak**, the best of shipbuilding timbers, mostly from Burma.

Cork, the bark of a kind of oak, exported from Spain, Portugal, and Algeria.

Esparto and Wood-fibre (for paper-making). See 82.

68. Ivory, chiefly the tusks of the African elephant. Africa is estimated to supply three-fourths of the ivory of commerce. An article of greatly inferior value is imported under the name of **vegetable ivory** from the northern parts of the Andes; most of the substance so called is derived from the seed of a palm; it can be used only in making small articles (buttons, &c.).

69. Sponges.—The horny internal skeleton of marine animals, the living portion of which consists of a coating of slime; from the eastern half of the Mediterranean (which produces those of best quality) and the West Indies (the Bahamas, Cuba), as well as the Gulf of Mexico. The trade seems likely to be seriously injured by the increasing use of rubber sponges.

Coral (red), chiefly from the western half of the Mediterranean. The trade is centred in Italy.

Pearls and pearl-shell (mother-of-pearl), mostly from tropical seas. Sponges, coral, and pearl-shell are all obtained by diving.

70. Feathers.—**Eider-down** from Norway, Iceland, the Faroe Islands. **Bed-feathers** from northern Germany and Russia. **Ostrich-feathers** from Cape Province and the Sudan.

Wax.—**Bees'-wax** is a product of almost all parts of the world. Wax is also obtained from various trees growing in Japan, China, Brazil, and North America. **Lac**, the principal ingredient in sealing-wax, is obtained from an Indian insect, but is essentially the resin of a tree infested by the insect.

71. Meat in the form of fresh beef, pork, bacon, and hams is imported into the United Kingdom, chiefly from temperate North America, whence also are derived most of the British imports of lard and tallow; fresh mutton comes chiefly from

New Zealand, Australia, and the Argentine Republic (23); **hides, bones, and hoofs** mainly from the British East Indies, though largely also from many other parts of the world in which cattle are reared (44).

72. Train-oil (244) is derived from the blubber of whales and seals caught in cold northern, and to a less extent in southern, waters, mostly from the so-called right or Greenland whale; **sperm-oil** from the head, and a tube running along the back, of the sperm-whale, which is met with all over the ocean.

73. Fishery Products.—So far as commerce is concerned, the principal fisheries of the world are those of Norway and the Great Bank of Newfoundland, and the principal commercial product consists of dried and cured **cod-fish**. Herrings are largely exported from Norway and the east coast of Great Britain to north Germany; **oysters** from the west of France to England and elsewhere; **canned salmon** from the Columbia, Fraser, and other rivers on the Pacific coast of North America, largely from those of Alaska, to many parts of the world

II.—MINERAL PRODUCTS.

74. Coal.—The principal coal-producing countries are shown in the table below.¹ The chief exporters of coal, the United

¹ Production of various countries in millions of tons :—

	Million Tons.				
	1873.	1890.	1910.	1920.	1930.
British Isles	127	182	264	229	248
United States	51	141	447	577	487
Germany	36	70	150	117	142
France	17·5	26	37	35	55
Belgium	15·8	10	24	22	27
Czechoslovakia . . . .	...	...	...	11	15
Russia	1·2	6	24	6	44
Australia and New Zealand .	1	4·3	12·0	15	13·5
Canada	1·1	3·1	11·5	15	10
India	0·5	2·2	12·0	18	23
Japan . . . . .	...	2·6	15·4	31	30
China . . . . .	...	...	...	19	25
Union of South Africa .	...	...	7·1	11·5	12

Kingdom, Germany, and the U.S.A. In the southern hemisphere the chief coal-producers are eastern Australia, the Union of South Africa, New Zealand, and Chile. **Lignite** is a somewhat woody kind of coal, with less heating-power than true coal.¹ **Anthracite** is a form of coal which burns without smoke, and has very great heating-power. It is therefore of greater value than ordinary coal. In the United States, where anthracite is most abundantly produced, the average value of anthracite at the pit-mouth in the five years 1909-13 inclusive was 8s. 2d. a ton, that of ordinary coal 4s. 9d.; but since then the ratio has declined. **Coke**, which also has a greater heating-power than ordinary coal, is made from certain kinds of coal by burning away the more volatile parts.

75. Iron and Steel.—Iron ore occurs all over the world, but iron (so-called pig iron) is made on a large scale chiefly in European countries rich in coal or timber (for smelting) as well as in ore, and in the United States. Where wood is used for smelting it has first to be made into charcoal, as wood-fuel has not enough heating-power, and coal must usually be converted into coke for the same purpose. **Steel**, which is iron containing from 0·3 to 1·5 per cent. of a substance called carbon, and is harder, tougher, and more elastic than iron, is now also made by wholesale methods. The leading producers are shown below.² Of the five countries mentioned in the table below, the United States alone produce at least 90 per cent. of the iron ore consumed by them. The countries next in importance to the five named in the note as iron producers are Russia, Luxemburg, Japan, and Czechoslovakia. The production of steel in the United States first exceeded that of the United Kingdom in 1886.

76. Petroleum, an oil that flows or is pumped from underground in such quantity that it is rapidly displacing all vegetable

¹ The chief countries producing lignite are Germany and Czechoslovakia, which in 1930 produced respectively 144 and 19 million tons.

² Production in millions of tons:—

	Years.	United Kingdom.	United States.	Germany.	France.	Belgium.
Pig Iron Average	. 1871-1875	6·46	2·24	1·92	1·23	...
"	. 1911-1913	9·70	28·11	17·83	4·80	2·23
"	. 1930	6·19	31·75	9·54	11·76	3·35
Steel	. 1873	0·50	0·17	0·25	0·15	...
"	. 1911-1913	7·04	28·74	16·91	4·27	2·37
"	. 1930	7·72	41·75	11·41	9·54	3·39

and animal oils for lighting and the oiling of machinery. It is used as fuel for steamship and locomotive engines. Petrol (motor spirit), kerosene, gas oil (Diesel oil) and lubricating oils are successively distilled from the crude product; the residue forms fuel oils. Certain oils yield asphalt and paraffin (used in making candles). Vaseline, medicinal paraffin oil, and batching oils (used in treating jute) are also obtained. Petroleum is most abundantly produced in the United States, U.S.S.R., and Venezuela¹; the British Empire yields comparatively small quantities of petroleum. **Ozokerit** is a natural product resembling solid paraffin, and used for the same purpose; it is produced chiefly in Polish Galicia. **Asphalt** or bitumen is obtained most abundantly from Switzerland, Barbados, Trinidad, and Algeria.

77. Gold and Silver.—The chief gold-producing parts of the world² are the Union of South Africa, Canada, the United States, Russia (principally eastern Siberia), Mexico, Rhodesia, Australasia; the chief silver-producers,³ Mexico, the United States, Canada, Peru, Australasia, and India.

Precious Stones.—**Diamonds**, from Cape Province, Brazil, India. **Rubies**, from Upper Burma. **Sapphires**, from India, Ceylon, &c. **Opals**, from Czechoslovakia.

78. Lead.—The principal lead-producing countries of the world are the United States, Spain, and Germany. **Copper** is used both by itself and as an ingredient in making bronze and brass. In the production of this metal the United States has long been far ahead of all other countries, and its production is rapidly increasing.⁴ Next come Chile, Belgian Congo, Canada, Japan, Mexico, Spain, and Peru. **Tin**, used in making *tin-plate*, that is, in coating sheets of iron to protect the iron or steel from rust, and also as an ingredient in bronze; produced chiefly in the Malay States, Bolivia, Banka and Billiton

¹ The production of petroleum in Venezuela rose from 2,500,000 barrels (1922) to over 140,000,000 barrels, or about 10 per cent. of world's production, in 1930.

² In 1898, the year before the outbreak of the war in South Africa, the Transvaal produced gold to the value of £16,044,000; in 1914, £35,700,000; in 1930, £43,600,000, or over 53 per cent. of the world's production. Southern Rhodesia in 1930 produced 547,630 fine ozs. of gold.

³ In 1930 the total quantity of silver produced in the world was about 250 millions of troy ounces, of which nearly two-thirds was derived from Mexico and the United States.

⁴ Between 1893 and 1930 the production of fine copper in the United States increased from less than 150,000 to over 765,000 tons.

(Dutch East Indies), China, Siam, Nigeria, the eastern states of Australia, England (Cornwall), and the Union of South Africa. **Zinc**, known in commerce in the crude state as *spelter*, is used in making brass and zinc-plate. The chief producing countries are Germany, Italy, United States, Spain, and Poland.

79. Minor Minerals.—The chief places of production of **quick-silver** or **mercury** (much used in extracting gold and silver from their ores, as well as in silvering glass) are United States, Spain, Italy, Algeria, Russia; **manganese** (now of great importance in steel-making), India, Brazil, Trans-Caucasia, and many other parts of the world; **platinum**, Russia (Ural Mountains); **salt**, United States, Germany, United Kingdom, &c., the bay-salt of Portugal of very high quality; deficient in parts of India, where it is a large import; **graphite** (black lead), now principally produced in Germany, Czechoslovakia, Ceylon, Madagascar, and Japan; **sulphur**, exported mainly from Sicily, also extracted from iron pyrites (258) imported into Great Britain from Spain and Portugal; used for many purposes, but principally perhaps in the making of sulphuric acid. **Meerschauum**, chiefly derived from Eskishehr in Asia Minor (120 miles east by south of Brusa). **Nitrate of soda**, from Chile and Peru, used in making other compounds of soda (85), as a **manure**, &c. **Guano**, a manure derived from Peru, Nauru, Ocean, and other islands in the Pacific, the Seychelles, Falkland Islands, &c.; other **phosphate** manures, from Florida and Tennessee (U.S.A.), Tunis, &c.

III.—MANUFACTURED ARTICLES.

80. Textiles (yarns, or threads spun for weaving, and woven fabrics) are now made most extensively by machinery in Europe, above all, western Europe, and in the United States; **cottons**, most largely in Great Britain (47); **woollens**, in Great Britain, France, Germany; **linens**, in Ireland and Scotland, as well as many European countries; **silks**, in France, Germany, and Switzerland; **jute fabrics**, at Dundee and in Bengal. All these fabrics are very largely manufactured in the United States, but there they are chiefly made for home use, whereas textiles are the most important commodities sent from western Europe, and,

above all, from the British Isles, to countries with a less highly developed manufacturing industry. The making of coarse cotton yarn and cotton tissues by machinery is growing up rapidly in some of the regions that produce raw cotton, above all in India, the southern parts of the United States, Japan, and China.

81. Leather, largely made in all countries. The hides and skins exported from the United States and the Australasian countries are mostly tanned, that is, in the form of leather, and an increasing proportion of those derived from India is in the same form. Germany, France, the United Kingdom, and the United States take the lead in the production of articles made from leather.

82. Paper, made from wood-pulp, esparto or alfa, a kind of grass, and vegetable fibre, chiefly in the form of rags (linen rags making the best). Among European countries Germany manufactures the greatest quantity of paper. Esparto is used chiefly in the United Kingdom, which imports the material from the south of Spain and north Africa. Wood-pulp is exported from Norway, Sweden, Canada, and other countries in which soft-wooded trees of little use for other purposes abound. Germany and the United Kingdom are the greatest exporters of paper, the British export consisting mostly of paper of high quality. Machine-made paper is now produced even in India and Japan.

83. An important chemical industry of recent years is the manufacture of artificial silks from cotton waste or some form of wood-fibre. The first factory was erected at Besançon in France, but the industry is now widely prosecuted.¹

84. Earthenware, most largely exported from Great Britain and Germany. England, Germany, and France are all noted for their **porcelain**, which is made from a fine white clay, called kaolin, resulting from the wearing away of granite rocks under the action of the weather. In the East, where the art of making porcelain was known long before it was discovered in Europe, China and Japan still practise the art, though no longer with the same success as formerly.

Glass, made chiefly from sand and soda or potash. Belgium

¹ The world production of artificial silk increased from 35,200 metric tons (1922) to over 220,000 metric tons, or nearly four times that of natural silk, in 1931.

is the great seat of the manufacture of window-glass. Bohemia has long had a high reputation for its ornamental glass, and England for its flint-glass (crystal).

85. Alkali, a term applied commercially chiefly to various compounds of soda and potash, used for the most part in the making of glass and soap. The compounds of soda most used are made from common salt, either by the action of sulphuric acid, coal, and limestone (Leblanc process), or by the action of ammonia and carbonic acid gas (Solvay process). Alkali was a large export from the United Kingdom, where the soda compounds so called used to be made solely by the Leblanc process, but of late the export has declined, chiefly in consequence of the rapid expansion of the manufacture in Germany by the Solvay process.

86. Coal-tar Dyes.—Dyes of all tints are now made from substances extracted from coal-tar, a by-product of the manufacture of gas, and are rapidly displacing many vegetable dyes. The first coal-tar dyes were made in England, but their manufacture was carried on principally in Germany until the Great War (1914–18) when Great Britain again began manufacture on a large scale.

Artificial flowers, imported into the United Kingdom almost entirely from France.

THE COUNTRIES OF THE EARTH.

EUROPE.

87. Europe, the smallest of the continents, is, taken as a whole, the most densely peopled. The situation and outline of the continent are peculiarly favourable to its climate. The whole area, except a small fraction in the north, lies within the temperate zone. The great irregularity of its outline causes it to enjoy in a higher degree than any other continent the mitigating effects of the sea on extremes of heat and cold, and its situation exposes it to the influence of favourable winds and sea-currents (8). Its southern peninsulas enjoy a peculiarly warm and equable climate, not only in consequence of the

moderating effect of the Mediterranean Sea on the temperature but also because these peninsulas are to a large extent protected from cold northerly winds by mountain-barriers on the north. By far the greater part of the area of Europe has a sufficient rainfall for cultivation, so that south of the region in which the temperature puts a limit on agriculture, almost the whole of the lowland area, and even in the far south land at the height of between two and three thousand feet, is capable of being tilled.

THE BRITISH ISLES.

88. Extent.—The British Isles occupy an area of more than 120,000 square miles, nearly two-thirds of which belong to Great Britain, including the small islands adjacent. Ireland is divided into Northern Ireland (comprising the counties of Antrim, Armagh, Down, Fermanagh, Londonderry, and Tyrone) and the Irish Free State (the remainder of the island). The Irish Free State has the status of a self-governing dominion, but British and Irish ports are to be free to each other's ships on payment of the customary dues. Generally, Northern Ireland includes the industrial area, the Irish Free State contains most of the pastoral country.

89. Surface and Communications.—With the exception of the Highlands of Scotland, in the north-west of that country, the greater part of the British Isles produces at least pasture-grasses and presents little hindrance to communication. In England the total area under crops and grass is equal to more than three-fourths of the entire surface, in Wales nearly three-fifths, in Ireland (where one-twelfth of the surface is made up of bog or marsh land) three-fourths, in Scotland only about one-fourth.

90. The closeness of the railway network in each division is indicated in a table in the appendix, but it is to be noted that the railways of Scotland are laid mainly in the Central Lowlands, that is, the region between the Firth of Clyde from Dumbartonshire to south Ayrshire and the North Sea from Aberdeen to Dunbar.

91. The effect of the surface features on the routes and efficiency of railways is well illustrated by the routes from

London to Plymouth. The older route of the Great Western Railway is the longest but easiest. It first ascends the Thames valley, passing south of the Chilterns and north of the Marlborough Downs. It next passes south of the Cotswold Hills to Bristol, then southwards to the west of the Mendip Hills, and between Exmoor Forest and the Blackdown Hills to Exeter, whence it runs east and south of Dartmoor to Plymouth. Its total length is 246 miles. The South-Western line has a more direct but more undulating route across valleys and uplands to Exeter, whence it passes round the north and west of Dartmoor to Plymouth, which it reaches in 230 miles. Yet the Great Western Railway could run express trains to and from London in as quick time as the South-Western. The new Great Western line opened in 1906, running up the valley of the Kennet south of the Marlborough Downs and joining the older line near Taunton, shortens the distance to 224 miles. The Pennine Chain forms a serious hindrance to communication between the populous districts of Lancashire and Yorkshire. Three tunnels upwards of three miles long pierce that chain, one more than 1000 feet above sea-level. In going from Manchester to Carlisle a height of 916 feet is surmounted at Shap Fell; in going from Leeds to Carlisle the watershed between the Ribble and the Lune is crossed at about 1250 feet above the sea. In west Monmouthshire and east Glamorganshire serious hindrances to communication are presented by high steep ridges lying between the populous coal-mining and iron-working valleys.

92. In the Southern Uplands and the Highlands of Scotland the railways wind about very widely to obtain the easiest routes, and in the Southern Uplands rise at the summits to altitudes varying from 500 to above 1000 feet. In the Highlands a distance of nearly 70 miles in a direct line separates the nearest railways across the Grampians, connecting the Lowlands with the shores of the Moray Firth. Of these railways, that through the central Highlands ascends the valleys of the Tay and Garry from Perth, and crosses from the basin of the Tay to that of the Spey by the Drumochter Pass at the height of 1484 feet.

93. In Ireland the effect of superficial configuration on railway routes is to be seen rather in the great windings of

the lines than the high altitudes which they reach. The most serious deviations from the direct route are those due to the highland country on the adjoining borders of the counties of Tipperary, Waterford, and Cork; the railway from Cork to Waterford being thus made to run 21 miles, and that to Dublin $36\frac{1}{2}$ miles, north, before turning east or north-east respectively.

94. The most serious obstructions to communication presented by water are those offered by the estuaries of the Thames, Severn, and Mersey, and by the Humber in England, by the estuaries of the Forth and Tay in Scotland, and by that of the Barrow in Ireland. There are two tunnels under the Thames below London Bridge, but only one of these is a railway tunnel. A tunnel under the Severn, $4\frac{1}{2}$ miles long, below Chepstow, has since 1886 connected Cardiff with Bristol. One under the Mersey connects Liverpool with Birkenhead. As yet there is no unbroken connection between the opposite sides of the Humber. A bridge opened in 1890 crosses the Firth of Forth at Queensferry a few miles above Edinburgh, and another has spanned the Tay at Dundee since 1887, but the estuary of the Barrow remained unbridged till 1906, preventing Waterford from having direct communication with the east coast of Ireland.

95. In England navigable rivers of greater or less length flow down from the hills on all sides. The most important are the Thames, the Severn, the Trent and Ouse (Yorkshire), and the Mersey, with their tributaries. All of these are connected by canals, but since the introduction of railways the canals have come to be of minor importance as means of transport. They are chiefly used for mineral traffic, but all of them together do not carry as much coal in a year as a single railway passing through an important coal-mining district. The existing canals are mostly of too small capacity to meet the demands of the present time. The **Berkeley Ship-Canal** on the left bank of the Severn, however, allows vessels drawing more than 10 feet to ascend from Sharpness to Gloucester, avoiding the windings and shallows of the river. The canals now in progress or projected are all intended to accommodate sea-going vessels. The **Manchester Ship-Canal**, now 28 feet in depth and 120 feet wide where the dimensions are smallest, large enough accordingly to admit all but the largest merchant-vessels, was opened

for through traffic to Manchester on 1st Jan. 1894. Its total length from Eastham, on the S. side of the Mersey, is $35\frac{1}{2}$ miles, of which the lower 21 miles are tidal.

96. In Scotland the most important canal is the **Forth and Clyde Canal**, which allows small sea-going ships to pass from Grangemouth on the Firth of Forth to the Firth of Clyde above Dumbarton.¹ A ship-canal with a minimum depth of 17 feet has been constructed through the long narrow valley called Glen More, or the Great Valley, between Loch Linnhe and the Moray Firth. It is known as the **Caledonian Canal**, and is noteworthy as a piece of engineering, but is not much used for the purpose for which it was designed, namely, to allow ships to avoid the stormy passage through the Pentland Firth in the north of Scotland.

97. In Ireland the principal navigable rivers are the Shannon and the Barrow. The **Shannon**, the largest river in the British Isles, has been made navigable to Lough Allen, that is, not far from its source, but above Athlone the navigation is quite insignificant. It is connected by canals with Belfast and Dublin (with the latter by the **Grand and Royal Canals**), and by a branch canal with the Barrow at Athy.

98. **Climate.**—The climate of the British Isles is mild and equable for the latitude, a consequence of their position with regard to the warm winds and currents of the North Atlantic (8). It is favourable to active exertion throughout the year. In winter there is little or no interruption to field labour in any of the parts best suited to agriculture, and there is little interruption to communication from snow or ice. The average rainfall at Greenwich, in one of the drier parts of the country, is 25 inches, the mean temperature of the coldest month there (January) is 39° F., of the hottest (July) $63\frac{1}{2}^{\circ}$ F. No lowland station in the British Isles has a mean temperature for the coldest month as low as 37° F.

99. **Agricultural Products.**—The chief corn-crops of the British Isles are oats, wheat, and barley, the chief green-crops, turnips, potatoes, and mangold. Crops peculiar to special

¹ The proposal to make a canal deep enough for large ocean vessels from the Forth to the Firth of Clyde, either by Loch Lomond and Loch Long or by a more direct route involving more costly cuttings, has been rejected.

localities are hops and flax. Hops are grown chiefly in Kent, and also to a considerable extent in three other south-eastern counties, Sussex, Surrey, and Hants, as well as in those of Hereford and Worcester. Flax is cultivated most largely in the north-east of Ireland. The main fruit-growing counties are Kent, Devon, Herefordshire, and Worcestershire, in all of which cider is made from apples and perry from pears. Evesham and Pershore in south Worcestershire and Bewdley in north Worcestershire are all specially noted for their fruit and vegetable gardens, for the products of which the populous towns of north Warwickshire and south Staffordshire offer an excellent market. The Clyde valley in Scotland, above Glasgow, is also celebrated for its apples. Potatoes, which are extensively grown in Ireland, are a very important crop in Lincolnshire, and the late potatoes grown on the red soil round Dunbar in Haddingtonshire have long had a high reputation. Girvan in south Ayrshire carries on a large trade with Glasgow in early potatoes.

100. In recent years there has been a great decline in the area under corn-crops generally, and a smaller decline under green crops, in consequence of the great rise in the imports of agricultural products from distant countries where they are grown more cheaply.¹ The total area under corn-crops has fallen from 12 million acres in 1869 to less than 9 million acres.² The decline has affected wheat more than any other crop. In Scotland and Ireland the cultivation of wheat is now carried on over a very small acreage indeed (in each less than 80,000 acres). Oats is the only grain-crop that is still cultivated over nearly as large an extent of ground as it covered in 1869. The principal increase during this period has been in grasses, whether cultivated or in the form of permanent pasture. This increase might be expected to betoken an increase in the number of grazing animals. But in sheep there is a considerable decline, and the principal increase is in horses and cattle (44). Cattle have increased above all in the western and west midland counties, from which an enormous trade in milk and dairy produce is carried on with London and other large towns. Live

¹ In 1869 the area under wheat was nearly 4,000,000 acres. In 1895 it was as low as 1,456,000 acres; in 1918 (war maximum), 2,793,000 acres; in 1931 (excluding Ireland), 1,247,000 acres.

² In 1918 (war maximum), 10,951,000 acres.

stock of different kinds are the principal products of Irish agriculture, and many animals are sent living from Ireland to Britain. From Ireland also Great Britain obtains immense quantities of butter and eggs, and the quality of Irish butter has been greatly improved in recent years by the introduction of creameries, in which the milk is treated by wholesale scientific methods. In England, Buckinghamshire, Norfolk, and Suffolk are the counties most celebrated for their poultry. Aylesbury ducks and Norfolk turkeys are well known.

101. While the home production of wheat has been declining, the number of people engaged in British mining and manufacturing industries has been increasing. The proportion of home-grown wheat to the whole amount of wheat and flour consumed has in consequence sunk very greatly. Shortly after the middle of the nineteenth century the proportion was above 70 per cent. ; in recent years it has been less than 25 per cent. The proportion of home-produced meat consumed in the country has latterly been declining also, in consequence of the great increase in the quantity of frozen mutton and beef imported from New Zealand, Australia, and Argentina.

102. Mineral Products.—The most important minerals of the United Kingdom are coal and iron ore (**104**), in the production of both of which it was ahead of all other countries till 1898 (**74, 75**). The principal other minerals, apart from building-stone, are slate, produced chiefly in Carnarvonshire, near the Menai Strait, and in Merionethshire; tin ore, chiefly in southern Cornwall; salt, in the basin of the Weaver in Cheshire, at Droitwich and Stoke Prior in the north of Worcestershire, in north Lancashire, on both sides of the estuary of the Tees (south Durham and north-east Yorkshire), and at Carrickfergus on Belfast Lough, Antrim, Ireland; various clays, the most valuable being china-clay (**84**), produced in Cornwall and Devon, and fireclay, produced in south Staffordshire, the south of Yorkshire, Lanarkshire, and many other places, chiefly on or near coalfields; lead ore, produced in many parts of the country, most abundantly in the west of Durham and in the Isle of Man; oil shale, chiefly in a tract extending from the borders of Mid and West Lothian to the west of Fife in Scotland; copper ore, chiefly in Cornwall and the south-west of Devon

(the total production only a small fraction of the import either in the form of ore or partly refined metal); zinc ore, chiefly in Denbigh, Cardigan, and other Welsh counties, and in the Isle of Man.

103. Foreign Commerce.—Before the Great War the foreign commerce of the United Kingdom was much greater in value than that of any other country in the world, and it is still greater per head than that of most other countries in which there is a dense population (see Table at end of book). This shows that for foreign commerce this country must have peculiar advantages of one kind or another.

104. The British Isles have, first, certain important physical or natural advantages.

These are : (1) A favourable climate (98).

(2) The abundance of coal and iron and some other raw materials. With regard to the wealth of the country in coal and iron, it should be noted that the advantage arises not only from the abundance of these minerals, but also from the fact that important supplies of both are found quite close to seaports, and that the coal necessary to the smelting of the iron is at no great distance from the iron ores, in some cases on the spot. These circumstances make this perhaps the most important of all the advantages of Great Britain, at least in relation to manufacturing industry. The great coalfield of **Durham and Northumberland** is bisected by the estuary of the Tyne and sends away enormous quantities of coal both abroad and coastwise through the ports of Newcastle, South and North Shields, Blyth and Sunderland. The southern end of it, moreover, is close beside the iron deposits of **Cleveland**, on the Tees in the North Riding of Yorkshire, the district which produces on an average more than a third of all the iron ore raised in the kingdom. On the other side of the country the coalfield of **Cumberland** includes the seaports of Maryport, Workington, and Whitehaven, and lies close to the rich iron ores (red hematite) of south Cumberland and north Lancashire,¹ which are among the best ores for steel-making. The great coalfields of the south-east of **Lancashire** and the south-west of **Yorkshire** and the adjoining counties to the

¹ These ores, however, are mostly smelted with coke brought from the Newcastle coalfield.

south are in a narrow part of the country, having ready access to the ports of Goole, Hull, Immingham, and Grimsby on the east, as well as Liverpool on the west (108). The South Wales coalfield, extending continuously from the south-east of Carmarthenshire to the valley of the Usk in Monmouthshire, embraces the fine natural harbour of Swansea, and is in immediate proximity to the seaports of Cardiff and Newport. Great beds of ironstone here gave rise to a vast iron industry, which is still carried on with great energy, though the local ore is now worked only to a limited extent, in consequence of the facility with which ores more easily worked can be got from abroad, chiefly from Spain (259). The coalfields of North Wales, in the counties of Flint and Denbigh, are close to the seaport of Chester, and are within easy reach of the much more important seaport of Birkenhead (Liverpool). The seaport of Bristol gives name to a coalfield on which it stands in south Gloucestershire and north Somerset, and is at a short distance from other detached coalfields in north Somerset, and from the coal and iron yielding district of the Forest of Dean in Gloucestershire west of the Severn. In the midland counties, where the coalfields are farthest from the sea, the character of the surface renders communication particularly easy, and in this region canal carriage is most largely made use of. Among these coalfields may be mentioned the continuation of the Yorkshire coalfield through the east of Derbyshire into Nottinghamshire, the rich coalfields of north and south Staffordshire, the latter extending into Worcestershire; the coalfields in the middle of Warwickshire and the west of Leicestershire, and that in south Shropshire extending along the Severn into the west of Worcestershire. Coal mines are also worked in the east of Kent and in Sussex. Iron ores are worked to a large extent on the north Staffordshire coalfield, to a less extent on that of south Stafford; and other important deposits of iron ore at no great distance from one or other of the coalfields are worked in Northamptonshire, the north-east of Leicestershire, and the south-west and north-west of Lincolnshire.

105. In Scotland the coalfields are likewise close to the sea, and likewise rich in iron. In the west the Ayrshire coalfield extends to the ports of Ayr, Troon, and Ardrossan. In the Clyde basin the coalfield extends below the port of Glasgow.

The ports of Grangemouth, Bo'ness, Alloa, Burntisland, Methil, Kirkcaldy, and Leith are all upon or near coalfields farther east. The **black band ironstone** found in some parts of these coalfields (as in Ayrshire and the Clyde basin), but now nearly exhausted, yields an excellent iron for foundry purposes, and is itself for the most part so rich in coaly matter as to reduce considerably the expense for fuel in the operations preliminary to smelting. In several of the British coalfields coal is now being largely employed for the development of electrical power (15). (See also 111 (4)).

106. Unfortunately the advantages here referred to are confined to the island of Great Britain. The most productive **coal mines of Ireland** are at a considerable distance from the coast, in the north Kilkenny county, and at a great distance from the chief iron-producing district of Ireland, in the county of Antrim. The Irish coal, moreover, is of inferior quality. The total production of coal and iron ore in Ireland is not equal to one per cent. of the production of these minerals in Great Britain.

107. With reference to the advantages to the commerce of the British Isles directly flowing from the wealth of Great Britain in coal and iron, one fact should never be forgotten. The **very** greatness of these advantages makes the prospect of the ultimate exhaustion of the favourably situated coalfields or the rise of the cost of production of coal in Great Britain relatively to the cost in other countries all the more serious for that country.

108. Other natural advantages are (3) the natural facilities for establishing means of communication (90, 95).

(4) The nearness of the coast on both sides. This advantage may be regarded in the first place as an additional circumstance in favour of internal communication. The value of a railway is obviously much enhanced by being connected with a seaport, and the form of the country is such that a short railway establishes such a connection with any part of the interior. There is no place in the British Isles as much as a hundred miles from a seaport. Further, the nature of this advantage is well illustrated by the trade of some of our seaports. Though Lancashire, on the west side of the Pennine Chain, is the great

seat of our cotton manufactures, Grimsby exported in the period 1909-13 a greater value of cotton yarn than Liverpool; Hull and Grimsby together nearly as much as Liverpool and Manchester together; the eastern ports of Great Britain collectively always export a greater value than the western ports collectively. The reason is that continental nations are among the chief customers for the better qualities of cotton yarn of British manufacture, and these customers are most easily reached from the east side. The woollen manufactures, again, are mainly carried on to the east of the Pennine Chain, but the woven fabrics are much more largely exported from Liverpool than from any other port, though woollen yarns are exported thence only to a limited extent.

109. (5) The abundance of seaports is what enables the advantage just illustrated to be utilised, but is also of importance in the extent of the accommodation it provides for shipping. No doubt such accommodation can sometimes be provided artificially, as in most cases it needs to be improved artificially, but there is an enormous advantage in respect of cost where facilities are furnished by nature, at a great many different points. In the British Isles there are more than twenty seaports with a depth of at least 25 feet at high water, and most of these are situated in the vicinity of the great seats of production. In view of the increasing size of the shipping of the present day this large number of deep harbours is a matter of peculiar importance (618).

110. (6) The geographical position of the British Isles. This is of great moment in more ways than one. In the first place, the "silver streak" is a natural bulwark of the highest value. It enables the kingdom to place its chief reliance for defence upon the navy, which makes a much less heavy drain upon the working population than the vast armies which continental nations are obliged to train and keep on foot. Secondly, it is of great importance to British commerce that the British Isles lie nearly in the middle of the land surface of the globe, or, what is of more consequence, occupy a somewhat central position among the nations that carry on a great commerce at the present day. It was of no importance to England that America lay on the west, until America began to rear a population more

or less dependent on foreign commerce. The effects of this central position with respect to the distribution of home products and manufactures will be understood readily enough from the illustration already given of the advantage of having seaports on different sides. Another important effect is well illustrated by the fact that on an average about one-fifth of the total value of the British exports represents articles that have been collected from various parts of the globe to be as widely distributed again in other parts. The wool of Australia and South Africa is sent from Great Britain to Germany, France, the United States, and other manufacturing countries; raw cotton is brought hither from America, India, and Egypt, and redistributed over the continent of Europe; silks and wines are imported from France, dried fruit from the Mediterranean, and sent to Australia along with the numerous products of British industry destined for the same market, and so on. A great variety of articles of eastern origin (rubber, cinchona bark, jute, tin, hemp, hides, spices, tea, &c.) are exported from the British Isles to the United States. This export of products of foreign and colonial origin is additional to the goods that are merely transhipped in British waters. The aggregate value of transhipped goods has in recent years averaged rather more than 20 millions sterling.

111. Of the advantages of the British Isles in relation to foreign commerce that cannot be classed under the head of physical or natural advantages, some are of great importance. Among these are:—

(1) The fact that nearly all the great mechanical inventions by which modern industry has been revolutionised (the steam-engine and the locomotive, machinery for spinning and weaving, &c.) originated in Great Britain.

(2) The abundance of capital.

(3) The skill, endurance, and energy of the British workman, compared with most of his rivals.

(4) The magnitude of British shipping.¹ This advantage is intimately connected with some of those which have been mentioned under the head of physical or natural advantages. The numerous British seaports afford an exceptional amount

¹ See the shipping table in the appendix.

of accommodation for shipping. What is of still more importance, now that iron and steel have come to be the chief materials used in the construction of ships,¹ the British Isles have special facilities for shipbuilding. Another advantage is less obvious. British coal being of excellent quality and conveniently situated for export, the United Kingdom is the greatest coal-exporting country in the world. Now, in proportion to its value, coal is a very bulky article, and demands for its carriage a large amount of tonnage. In pre-war years coal alone required more than two-fifths of the tonnage of vessels cleared with cargoes from British seaports. The ships that are thus sure of a cargo outwards are able to carry cargo homewards all the more cheaply, which is a great advantage to British shipping over that of other countries. In the five years 1909-13 the tonnage that entered the ports of the British Isles in ballast was more than twice as great as that which cleared. More than half the tonnage that cleared in ballast, however, was under a foreign flag, although foreign shipping at British ports is much less than one-third of the whole.

(5) The extent of the British colonial and other possessions.²

(6) The extent to which the English language is spread over the globe—in the United States as well as in the British colonies.

(7) The free-trade policy (28) that has prevailed in the United Kingdom for more than a generation.³

112. The chief disadvantages against which British commerce and industry have to contend are :—

(1) The dearness of land arising from the density of population and the great development of industry.

(2) High wages and short hours for the workman—a disadvantage, however, which in the opinion of competent judges does not fully counterbalance the advantage of superior efficiency, as compared with most of the commercial rivals of Great Britain, though perhaps not all.

¹ See the shipping table in the appendix.

² In the quinquennial periods from 1861-65 to 1926-30 (except in 1896-1905 when the U.S.A. held first place) the British Empire furnished a larger proportion of imports into the United Kingdom than any one foreign country. The importance of the British Empire as a market for British produce and manufacture is still more striking, inasmuch as in all these periods it received more than one-fourth of the exported British produce, in the last eight of them one-third or more, in 1926-30 nearly one-half.

³ A policy of protection was adopted by the United Kingdom in 1931.

(3) The lack of a decimal coinage and system of weights and measures.

(4) The deficiency of large water-powers, now essential in some branches of industry.

(5) Above all, the high tariffs of many foreign countries, and even British colonies.

113. Exports and Imports.—In recent years cotton manufactures, exclusive of yarn, have made up about one-fourth of the whole value of British **exports**, and the products of the textile industries in general more than one-third of the entire value. These are, in order, cottons and cotton yarn, woollens and woollen yarn, linens and linen yarn, silk and jute manufactures, besides apparel and haberdashery. Iron and steel in all forms, together with manufactures of iron and steel, including steam-engines and machinery, make up not far short of one-fifth of the total value. Among other exports of importance are coal, copper and copper wares, as well as bronze and brass wares, earthenware and porcelain. Next to coal, herrings are the principal export not a manufactured product. The only agricultural export of home production of any consequence is wool, which in the last thirty years of the nineteenth century was exported in larger and larger quantities in successive quinquennial periods.

114. Among the imports, grain of all kinds (principally wheat) takes the first place, and has done so in every quinquennial period since 1871–75. Wheat is derived from many different countries, in very different proportions in different years, but the largest quantity, if we include flour, has hitherto usually come from the United States. Canada, India, Russia, Argentina, and Australia are also large contributors. Maize comes chiefly from Argentina and the United States. Sugar, both refined and unrefined, comes chiefly from Germany and other continental countries, but a good deal of unrefined sugar comes from the West Indies. The great bulk of the bacon and hams comes from the United States, but frozen mutton comes chiefly from New Zealand and Australia, though Argentina also sends very large quantities. Besides frozen mutton, wool, tea, and jute are the principal commodities, of which the largest supplies are derived from British possessions, and of these wool

is by far the most important. The great bulk of the raw cotton imported comes from the United States, while Egypt supplies most of the remainder. India sends very little to England. Among other imports of consequence are leather, rubber, coffee, tin, tea, rice, hides, indigo, butter, timber.

115. The exports of the United Kingdom are very widely scattered over the world, but it is worthy of note that India, which in the seventeenth and eighteenth centuries sent cottons (calicoes) to England, has, since about the beginning of the nineteenth century, been the chief market for English cottons.¹ Large quantities of British exports consist of goods that have first been imported. A trade of this kind is called *entrepôt* trade. Of the articles in which this trade is carried on, wool has long been the chief.

116. It was formerly impossible to say in what proportion the United Kingdom carried on trade with different countries, for the British returns merely took note of the countries to which belonged the seaports from which goods came and to which goods were sent.² Hence we could not tell from our reports whether we carried on any trade at all with Switzerland, although we knew from other sources that our trade with that country was very large. So, too, the trade reckoned as carried on with Germany was only that carried on through German ports, but we knew that a great deal of German trade with this country goes on through Dutch and Belgian ports. For that reason it is always better to reckon the trade of Germany, Holland, and Belgium with this country as one. If we do that we find that these countries collectively rank first among those which receive British exports, British India coming second, and the Australasian colonies third. Among countries supplying British imports the first place always belongs to the United States, whence so much corn (32, 33) and cotton (47), as well as other agricultural products, are derived; Germany, Holland, and Belgium taking the second place, and France the third. See also paragraph 111 (5).

¹ In 1913 India took over 43 per cent. of the cotton piece-goods exported from Britain; in 1925 this declined to 29 per cent., in 1930 to 22·5 per cent. The decline in Indian imports of British cotton goods since 1913 is to be attributed to diminished consumption, increased local production, and increased foreign competition.

² Our trade returns show the merchandise consigned to and from different countries.

CHIEF INDUSTRIAL TOWNS AND SEAPORTS.

117. Capital.—London, the seat of an immense amount of manufacturing industry, but too varied in character for any of the branches of such industry to be specially mentioned.

118. Cotton Manufacturing Towns.—(a) The Manchester group. Manchester (including Salford), the centre of trade; Oldham, Bolton, Bury, Rochdale, Blackburn, Preston in Lancashire, Stockport and Ashton in Cheshire, and Glossop in Derbyshire, all engaged in spinning; Burnley, Preston, the chief weaving centres, Burnley producing principally the cheaper, Preston the finer fabrics. (b) Nottingham, on the Trent (cotton hosiery and machine-made net and lace). (c) Scottish towns. Glasgow, on the Clyde (fine lawns, muslins, and other special fabrics), Paisley, in Renfrewshire (cotton thread).

119. The chief advantages of the Manchester group are these. The towns belonging to it all lie on, or quite close to, a coalfield; they have convenient ports in Liverpool and Manchester; and they have a very moist climate, which is found to be of peculiar importance in the cotton industry. All the chief manufacturing towns, except Preston, lie just at the base of the Pennine Chain, and on the side exposed to south-west winds (8, 9). Liverpool is found by experience to have too dry air for cotton-spinning. But in addition to these local advantages the cotton industry of England has a great advantage in the general conditions that favour the maritime trade of the country. Cotton goods are largely used in all parts of the world, and though Liverpool and Manchester are the great ports of the cotton district, all other great ports of the country are made use of to distribute its products.¹ The chief advantages of

London	4,400,000	Stockport	125,000
Greater London . .	8,205,000	Blackburn	125,000
Manchester-Salford .	990,000	Preston	120,000
Oldham	140,000	Burnley	100,000
Bolton	180,000	Nottingham	270,000
Bury	55,000	Glasgow	1,100,000
Rochdale	90,000	Paisley	85,000

¹ In 1926-51 Liverpool and Manchester together exported less than two-thirds of the total value of cotton goods of all kinds exported from the United Kingdom, the remainder being sent from London, the Humber ports, Southampton, Glasgow, Harwich, Middlesbrough, &c.

Nottingham are its situation on a coalfield and its facilities for communication.

120. Woollen Manufacturing Towns.—(a) The Yorkshire group. Leeds, a great centre of trade with a varied industry, including iron and leather; Bradford, Halifax, Huddersfield, Wakefield, and Keighley, all chiefly engaged in worsted manufactures; Batley, Dewsbury, and Morley chiefly engaged in woollen manufactures in the special sense of the term (122, 123); Heckmondwike, as well as Halifax, engaged in the manufacture of carpets. Rochdale in Lancashire has important manufactures of flannels. (b) The west of England, formerly producing chiefly woollen as distinguished from worsted cloth, but now also manufacturing high-class worsteds; chief centres, Stroud and the Stroud Valley in Gloucestershire, Bradford and Trowbridge in Wilts. (c) Other parts of England. Leicester (woollen hosiery), Kidderminster in Worcestershire, and Wilton in Wilts, both noted for carpets. (d) Scotland. Hawick (woollen hosiery), Galashiels, Selkirk, and Peebles, in the Tweed basin, noted for their tweeds (first called twills, and then tweeds by mistake, but afterwards deliberately, as the name was appropriate); Alloa, Edinburgh, Ayr, Kilmarnock, Glasgow, and Aberdeen. (e) Many small towns in Ireland.

121. The woollen industry of the United Kingdom is much more wide-spread than the cotton, and in former times it was much more evenly distributed. Now the West Riding of Yorkshire is the great seat of both branches of the industry, this predominance being due to the local coalfield. It is only since machinery came into use in the early part of the nineteenth century that most of the great towns have grown up. The industry is nevertheless of old date in this district. It has been carried on since Henry VII. planted some Flemish weavers here in 1489, in what was then a very sparsely peopled area of woodland and sheep-pastures, but enjoying the advantage of plenty of pure water for washing and scouring the wool, and for use in dyeing.

122. This district also had the advantage of being near the pastures on which are reared the Lincoln breed of sheep, the

Leeds	.	.	.	485,000	Huddersfield	.	•	.	115,000
Bradford	.	.	.	300,000	Leicester	.	.	.	240,000
Halifax	.	.	.	100,000					

breed that yields the most lustrous of all sheep-wools. It is a long wool, well adapted for the worsted branch of the manufacture. In this branch it is almost solely long wools that are used. These have to be combed before they are spun into yarn, and in the cloths made from them the intercrossing of the yarns can be clearly seen. Worsted goods very often have a lustrous appearance, and in this branch of the industry worsted yarns are often mixed with other lustrous fibres, such as silk, mohair (45) and alpaca (45). Cotton is also very largely mixed with worsted yarns, but only in the warp. Woollen goods in the special sense of the term are mostly made from short-fibred wools, which are not combed. In them the intercrossing of the fibres cannot be seen, and very often there is a nap on the surface. As most of the English wools are adapted for the worsted rather than the woollen branch of the industry, the worsted branch is that for which England has long been specially noted. The United Kingdom exports enormous quantities of worsted yarn, besides combed wool not spun into yarn, but very little woollen yarn. The value of the woollen cloths exported is also always less than that of the worsteds, but not in the same proportion.

123. Of the towns of the West Riding, Leeds has always been the most populous and important. This is due to its advantages for trade. It stands on a good navigable river, the Aire, and in such a position as to communicate easily both with the Vale of York and with more than one of the Yorkshire valleys. Bradford, however, is the chief town connected with the woollen industry, and more especially the worsted branch. This seems to be due chiefly to the excellence of its water for washing and dyeing. It is said that probably about five-sixths of the wool manufactured in the United Kingdom is treated in Bradford in some way or other.

124. Good water is also among the advantages of the west of England woollen manufacturing towns, and the Stroud Valley has long been noted for its dye-works, especially for scarlet cloth. The Leicestershire breed of sheep, yielding a worsted wool well adapted for hosiery, accounts for the long continuance of that industry at Leicester. Pure water, water-power, and neighbouring sheep-pastures explain the rise of the manufacturing towns of the Tweed basin.

125. Linen Manufacturing Towns.—Belfast, in Ireland, the chief centre of the industry, Dundee (linen and jute), Arbroath, Forfar, Dunfermline (table-linen), all in the east of Scotland; Leeds and Barnsley in Yorkshire. Dundee, Sunderland, Stockton, and other seaports produce large quantities of sail-cloth.

126. In quality Irish linens are unsurpassed. The industry in Ireland is very old, and was once wide-spread, but has become centred in the north-east, where it has the advantage of local supplies of flax, an excellent port in Belfast for the import of foreign flax and of coal, and excellent water, pure air, and a humid equable climate which all contribute to make the bleaching grounds round Belfast among the best to be found anywhere. Great quantities of foreign linens, in many cases woven with Belfast yarns, come to Belfast to be bleached. The linen industry of Forfarshire and Fife in Scotland is also of old standing. It has long used chiefly Baltic flax, and the rise of the industry was no doubt favoured by the fact that Dundee is one of the nearest British ports to the Baltic. The Yorkshire towns are almost solely occupied with the weaving branch of the industry.

127. Towns engaged in the silk industry.—Macclesfield and Congleton in Cheshire, Derby, Chesterfield and other towns in Derbyshire, Leek (whose excellent water has made it the English centre of silk-dyeing and the manufacture of silk thread) in north Staffordshire; Coventry (ribbons) in Warwickshire; Bradford in Yorkshire, which manufactures chiefly silk waste, or what used to be treated as such; the district of Spitalfields in London, where the industry, now almost confined to the manufacture of umbrella silk, has lingered on since it was introduced by French Huguenots after the revocation of the Edict of Nantes in 1685; and Braintree in Essex.

128. Towns engaged in iron industries.—(a) **In iron-smelting.**—Middlesbrough, on the Tees, Yorkshire; Leeds and other places in the West Riding of Yorkshire; Merthyr Tydfil, Cardiff, Newport, and other places in South Wales or adjoining parts of

Belfast . . .	415,000	Coventry . . .	170,000
Dundee . . .	175,000	Middlesbrough . . .	140,000
Sunderland . . .	185,000	Merthyr Tydfil . . .	70,000
Stockton . . .	70,000	Newport . . .	90,000
Derby . . .	145,000	Cardiff . . .	225,000

Monmouth; Barrow, Workington, and other places near the deposits of red hematite (104) in the north-west of England; in the "Black Country" in south Staffordshire and north Warwickshire; at Airdrie, Coatbridge, Motherwell, and other places in Lanarkshire, and at Carron in Stirlingshire. (b) **In the manufacture of articles made from iron.**—Birmingham, long noted for its very varied metallic industry; many towns round Birmingham, including Wolverhampton, Walsall, Dudley, Redditch (needles), Stourbridge; Sheffield, in the West Riding of Yorkshire, long noted for its cutlery, now also for large articles in steel (armour-plates, rails, &c.); Middlesbrough, Barrow (rails); Swansea, Llanelli, Cardiff, Newport, and many other places on or near the South Wales coalfield, all noted for the making of tin and zinc-plate (78); Falkirk in Stirlingshire (stoves and other articles of cast-iron). (c) **In making machinery.**—Oldham, Bolton (chiefly cotton); Keighley, north-west of Bradford (worsted); Leicester (for elastic webbing, &c.); Manchester, Birmingham, Glasgow (marine engines and boilers, locomotives, sugar machinery, &c.); Newcastle, Darlington, Crewe, Swindon, Derby, &c. (steam-engines). (d) **Agricultural implements.**—Grantham, Gainsborough, Lincoln, Ipswich, &c. (e) **Arms.**—Birmingham (chiefly small-arms); Newcastle (heavy ordnance). (f) **In shipbuilding** (mostly of steel).—Various places on the Clyde, the Tyne, the Wear, and the Tees, Belfast in Ireland, besides West Hartlepool, Hull, Liverpool, Barrow, &c. There are government dockyards with naval factories at Chatham, Sheerness, Portsmouth, Devonport, Pembroke, and Rosyth.

129. Copper and other metallic industries.—Swansea, long the chief seat of copper-smelting, now also of the smelting of ores of silver, zinc, lead, sulphur. The copper ore used to be chiefly derived from Cornwall and Devon, and Swansea had thus the advantage of being the nearest port at which smelting fuel could be cheaply obtained. Now the ore is derived from all parts of

Barrow	65,000	Newcastle-Gateshead	405,000
Birmingham (post-census		West Hartlepool	70,000
boundaries of 1911)	1,000,000	Hull	315,000
Wolverhampton	135,000	Liverpool-Birkenhead-	
Walsall	105,000	Bootle	1,000,000
Sheffield	500,000	Portsmouth	250,000
Swansea	165,000	Plymouth-Devonport	275,000

the world, mainly the United States, Chile, and Australia. Llanelli (Carmarthenshire) has a similar industry to that of Swansea ; Birmingham carries on all kinds of brass, bronze, and other metallic industries. Aluminium is prepared by means of water-power at Kinlochleven, on the borders of Argyllshire and Inverness-shire.

130. The iron-smelting industry is carried on either in the vicinity of deposits of iron ore, or on coalfields supplying coal suitable for making furnace coke, for it is almost solely coke that is used in smelting iron ore in this country. Limestone is also required as a flux in smelting iron ore, but this can generally be obtained at no great distance. The industry is tending to increase at and near seaports more than at inland centres, and that for two reasons—first, because British deposits of ore are becoming exhausted ; and second, because the wholesale processes by which steel is now made for many purposes are best carried on at most of our smelting centres with ores which can be more cheaply obtained from other countries—Spain, Algeria, Greece, &c.

131. Middlesbrough is a town and port which has grown up through the development of the Cleveland ores (104), since about the middle of the nineteenth century. Barrow has had a similar growth. Both these centres still use mainly English ores, but South Wales (including Monmouthshire) is now almost wholly dependent on foreign ores to feed its blast-furnaces, and north Lanarkshire mainly so. When wrought iron was the material chiefly used in shipbuilding the local ores yielded most of the iron required, but now that steel is the great shipbuilding material foreign ores are imported to make the steel from. On the other hand, the excellent foundry iron obtained from Scottish ores (105) furnishes most of the material used at Falkirk and elsewhere for making cast-iron goods. For this trade Falkirk has the further advantages of a central situation in the Lowlands of Scotland, and the port of Grangemouth close by for cheap conveyance to England and elsewhere.

132. Birmingham, and the towns of the Black Country, have been renowned for centuries in connection with iron and other metal-working industries. The district in which they lie contained abundance of iron ore, which was smelted with charcoal,

and yielded an iron well adapted for making nails and other articles for the working of which the coal of south Staffordshire furnished a valuable fuel. Facilities for communication expanded and diversified its trade. Birmingham lies in a level tract of country almost exactly midway between the rivers Severn, Upper Avon, and Trent, with all of which it has been connected by canal for more than a hundred years. The canals which wind in many directions through the Black Country carry about a fourth of the weight of all the goods carried on the inland waterways of the United Kingdom. Sheffield was noted for its cutlery even in Chaucer's time (fourteenth century). Its original advantages for this industry were water-power for working tilt-hammers, a good material for grindstones in the neighbourhood, and its situation on a navigable river, the Don. Coal is also found locally, but the iron used in this industry is not native, but has long been imported from Sweden, whose charcoal-smelted iron is necessary for the manufacture of good cutlery. Much of this iron is imported by the Don navigation.

133. In the making of earthenware and porcelain.—The county borough of Stoke-on-Trent, and other places in north Staffordshire ("the Potteries"); Stourbridge (stoneware from fireclay), Derby, and Worcester (porcelain). The district known as "the Potteries" has been the chief seat of this industry for considerably more than a hundred years. Its advantages are that the heaviest and bulkiest materials required in the industry, ordinary potter's earth and coal, are here found together in great abundance. The costlier materials are brought from a distance—china clay from Cornwall and Devon, flints from the Thames. The industry was greatly stimulated by the completion in 1777 of the Trent and Mersey Canal. **Glass.**—Birmingham, Dudley, Stourbridge, St. Helens, South Shields, Glasgow. **Alkali.**—Widnes in Lancashire, Flint, St. Helens, South Shields, Newcastle, Middlesbrough. In this manufacture salt and coal are necessary materials, and hence the industry is confined to places in the vicinity of which these heavy commodities are obtained. **Paper.**—Maidstone and other places in Kent, also in the counties of Derby, Lancashire (in the north of the county), Berks, Mid-Lothian, Aberdeen, &c.

Stoke-on-Trent	.	.	275,000	|	South Shields	.	.	115,000
St. Helens	.	.	105,000	|				

Abundance of pure water is one of the chief requirements of this industry. **Shoes.**—Northampton, Leicester, Stafford, Norwich. This industry is carried on where cattle most abound, yielding large supplies of local raw material, and where also coal is cheap. **Beer.**—Burton (on Trent), &c. The Burton industry is of very old date as well as very extensive, and is mainly due to the excellent water-supply. **Whisky.**—Many places in Scotland and Ireland. **Centres of Printing.**—London and Edinburgh, which, since 1920, includes Leith.

134. Fisheries.—The chief ports at which fish are landed in England are (in the order of importance) London, Grimsby, Hull, Lowestoft, and Yarmouth. Of late years the quantity of fish caught has been greatly increased by the use of steam-trawlers, that is, steam-boats dragging bag-shaped nets along the bottom of the sea, steam-drifters, and motor-boats. The shallows of the Dogger Bank, in the middle of the North Sea, where the water is only from 60 to 120 feet deep, have for centuries been the great fishing-grounds both for Dutch and English fishermen. Whitstable, on the north of Kent, is noted for its oysters. Billingsgate, in London, is the great market to which all kinds of fish are sent. In Scotland the principal seats of the herring-fishery, which is the one great fishery of that country, are Wick, Lerwick, Fraserburgh, and Peterhead. Large quantities of cured herrings are exported to the mainland of Europe, chiefly to Germany, the Baltic ports of Russia, and to Italy. The quality of the herrings cured in Scotland is attested by a government brand on the barrels. Pilchards, a variety of herring, are caught chiefly off the Cornish coasts. The Irish fisheries are of relatively small importance.

135. Seaports.—On the average of the period 1909–13, the ten following seaports, London, Liverpool, Hull, Manchester, Harwich, Southampton, Bristol, Glasgow, Leith, and Grimsby, were the first ten in respect of the value of their imports, receiving 83 per cent. of the total value of the imports of the United Kingdom. The first two of the seaports just named are also

Northampton . . .	90,000	Yarmouth . . .	55,000
Burton-on-Trent . . .	50,000	Bristol . . .	400,000
Edinburgh . . .	440,000	Southampton . . .	175,000
Grimsby . . .	95,000	Norwich . . .	125,000

first in the value of their exports, Liverpool, however, ranking under this head before London ; Glasgow ranked third, and Hull fourth among the exporting ports, and Harwich, under this head, was not one of the first ten.

136. London, as a port, includes the whole of the Thames to Tilbury and Gravesend, as well as Queenborough, still lower down. It has always stood first among the British seaports. It is the greatest seaport in the world, and the special features of its foreign trade are the great value of its imports and the great extent of its *entrepôt* trade (115). In the value of its exports it is surpassed by Liverpool, which is more favourably situated with reference to the chief manufacturing region of England ; but the vast population of London itself, a much larger population than exists on any equal area elsewhere, serves to account for a vast import trade, especially of articles that are consumed by all, such as tea. Its nearness to some of the greatest continental ports adds greatly to its trade, and does much to promote its *entrepôt* trade. Commodities are always conveyed most cheaply in the biggest ships, provided these ships can be filled, and there are many commodities for which London can make use of more big ships with advantage than any other port. Nearly all the tea, coffee, cacao, and spices that are brought to England come first to London, and large quantities of these are sent abroad again in other big ships carrying mixed cargoes. London is also the great port for raw wool (compare 110, 576).

137. Liverpool, as a seaport, includes the whole of the estuary of the Mersey below Runcorn, and thus embraces the shipping of Birkenhead. The port of Manchester, opened in 1894, extends from Runcorn inclusive to the head of the ship-canal. Liverpool has the advantage of being the great port for the whole of the exceedingly populous and productive manufacturing region extending from the Ribble in Lancashire to the north of Warwickshire, as well as for the Atlantic trade of the West Riding of Yorkshire. It rose to importance only when manufactures began to be extensive in that area, that is, after the beginning of the eighteenth century. The mountains of Wales, as well as the lack of convenient inlets on any other part of the coast to the west of that region, protect Liverpool against any rivals there, and the difficulty of making the Avon suited to large modern

ships has prevented Bristol from becoming a serious rival even in the trade of the southern part of the area served by Liverpool. Manchester is now a rival of Liverpool chiefly in the middle portion of that area.

138. Southampton has an excellent natural harbour, now greatly improved artificially, which has the great advantage of being the nearest on the south coast to London. Before the rise of Liverpool it was next in rank to London among English seaports. At that time Bristol was the chief seaport on the west coast, the difficult navigation at the mouth of the Severn guarding it against a rival there.

139. Glasgow first derived wealth as a seaport through the trade which it began to carry on with the West Indies in the eighteenth century in tobacco and sugar, then commodities of much greater relative value than they are now ; but it was only in the latter part of that century that a beginning was made with the deepening of the Clyde, which has enabled it to become the great port and seat of shipbuilding which it now is. It would not have attained this position, however, had it not been for the coal and iron mines in its vicinity, which have led to the rise of its iron and steel and numerous other manufacturing industries.

140. The direct foreign trade of all **Irish ports** is small, and especially under the head of exports. Dublin, Belfast, Cork, Waterford, Limerick, and Londonderry all import directly considerable quantities of wheat and maize ; Belfast also of flax ; but no Irish port has exports to foreign countries amounting to one million sterling in value. Even the linens of Belfast are sent to the United States and elsewhere mainly by way of Liverpool and Glasgow. On the other hand, the Irish ports carry on a large trade with Liverpool, Glasgow, Fleetwood, Milford Haven, and other British ports, to which they send cattle, swine, butter, and other native produce, and whence they receive British and foreign commodities ; and there are fast passenger steamer lines between Holyhead and Kingstown, Holyhead and Greenore, Fishguard (Pembrokeshire) and Ross-lare (co. Wexford), Fleetwood and Belfast, Heysham, on Morecambe Bay, and Belfast, Dublin, and Londonderry, Ardrossan

Dublin	.	.	.	315,000	|	Cork	.	.	.	80,000
--------	---	---	---	---------	--	------	---	---	---	--------

and Glasgow and Belfast, Stranraer and Larne, and Milford and Waterford. Queenstown, in the harbour of Cork, is a calling-place for Atlantic steamers.

FRANCE.

141. The area of France, including Corsica, is about seven-tenths larger than that of the British Isles, the population one-sixth smaller. The density of population is thus less in France than in the British Isles, but in France the population is more equally distributed. There is no area in France corresponding for scantiness of population to the Highlands of Scotland. The sparsest population is found on the high tablelands, among the narrow Alpine valleys in the south-east, and on the level sandy plains of the Landes in the south-west between the Adour and the Garonne.

142. Surface and Communications.—The greater part of the mainland of France is made up of plains, gently rolling land, or broken hilly country offering little hindrance to communication. Lofty mountains, the Pyrenees and the Alps, form the land frontier on the south and south-east. The only railway communication with Spain was formerly round the ends of the Pyrenees, where there is a difference of gauge as a security in case of war. Of the three railways that now run through the Pyrenees, one connects Pau with Saragossa, the others link Toulouse with Barcelona. As yet the sole railway from France across the Alps is that which connects the valleys of the Isère and the Dora Riparia by means of the earliest of the longer Alpine tunnels, the so-called **Mont Cenis** tunnel, opened in September 1871. (Compare paragraph 197.) The French **Jura** (637) and the **Vosges**, on the eastern frontier, reach a much greater height than any British mountains, and obstruct to a considerable extent the communication with the countries beyond the frontier. No railway crosses the Vosges for a distance of seventy-five miles.¹ The chief highlands within the French

¹ Two lines are projected through the Vosges into Alsace—(1) between St. Dié and Saales in the upper valley of the Bruche to establish a short connection between St. Dié and Strasbourg; (2) between St. Maurice on the upper Moselle and Wesserling, twenty miles by rail N.W. of Mulhouse.

frontier are those of the so-called **Central Plateau**, which is really situated more to the south-east, the mountains on their eastern margin towering above the narrow valley of the Rhone. The surface of the plateau has an average height of from 2500 to 3000 feet.

143. The effect of the Central Plateau on the means of communication and traffic in France is very marked. In consequence of this obstruction the railway from Paris to Marseilles first runs south-east to Dijon and then due south down the Saône-Rhone valley. This railway carries a greater amount of traffic per mile than any other in France. South of Paris the railways which come next to it in the amount of traffic are those to the west and south of the Central Plateau—by Orléans, Tours, and Bordeaux, and thence east by Toulouse.

144. The inland navigation of France is of much more importance than that of England. The tonnage of goods carried on the rivers and canals of the country is not much short of one-third of that carried by rail. The importance of the river navigation is shown by the fact that all the great rivers entering the sea on the west coast are connected by canal directly or indirectly with the Rhone or Rhine. The Seine is connected with the Rhine by the Marne and Rhine Canal (crossing the Vosges in the north), with the Rhone by the Burgundy Canal uniting the Yonne (a tributary of the Seine) and Saône (a tributary of the Rhone); the Loire is also connected with the Saône, and the Garonne with the lower Rhone (at Beaucaire above the delta), though the most important outlet of the canal which joins the Garonne at Toulouse is at Cette on the Mediterranean. By means of the Saône the navigation of the Rhone and Rhine is also connected by a canal which passes through the gap between the Vosges and the Jura. The chief inland navigation of France, however, is in the north between the basins of the Seine, Somme, and Escaut (Scheldt), where the flatness of the surface greatly favours canal construction, and there is a large amount of mineral traffic. A project for the construction of a canal from Strasbourg to Basel, designed to afford water-power at the locks, is causing much uneasiness in Switzerland on account of the great withdrawal of water from the Rhine which the carrying out of the project would entail.

145. Climate.—France generally has all the advantages of a westerly maritime situation, together with a more southerly latitude than the British Isles, and it is therefore to be expected that France should excel this country, as it does, in respect of the abundance and value of its agricultural products. On the surface of the Central Plateau the climate is bleak and the soil unproductive.

146. Agricultural Products.—Though the ratio of the total surface of France to that of the British Isles is only 1·7 : 1, the extent of corn-crops in France has in recent years been more than $3\frac{1}{2}$ times as great as in the United Kingdom. The importance of its wheat-crop is shown in paragraph 32. In addition to wheat and other British crops France produces large quantities of maize, besides the less valuable rye and buckwheat. Besides corn-crops France produces all the ordinary British green-crops, potatoes and mangold each covering more than twice as great an area as in the British Isles. The vine (40), the most valuable of all the French crops, covers an area as large as that occupied by wheat and barley together in the United Kingdom. The average of sugar-beet, mainly grown in the departments of the extreme north, greatly exceeds the British average of mangold. Large areas in the south-east are occupied by olive-yards and mulberries, the latter for the rearing of silkworms. Colza, hemp, flax, and tobacco are also important crops. See also 41.

147. Minerals.—The mineral wealth of France is greatly inferior to that of Great Britain, and the inferiority is most serious in the case of coal. The coalfields (74), though small and not very productive, are, however, scattered over different parts of the country, and the central region—that, accordingly, which is farthest from supplies of sea-borne coal—has the greatest number of centres of local supply. The most productive coalfield is a continuation of that of Belgium, and the chief centres of production are Lens and Anzin. Next in productiveness are those on or near the eastern side of the highlands which border the basins of the Rhone and Saône on the west—round St. Etienne in the middle, round Creuzot farther north, and at Alais in the south. By the treaty of Versailles the coal deposits of the Sarre (Saar) basin belong to France. The great

bulk of the **iron ore** produced in France is obtained from the basin of the Moselle, in the extreme north-east of the country. The ores of Lorraine, retransferred from Germany to France in 1919, were of peculiar advantage to the late German Empire. The ores of this district are very poor in iron, but they have acquired much greater value since 1879, when a process was invented (in England) by means of which such ores could be used in manufacturing steel on a large scale. Other deposits are worked round Creuzot, Caen (Normandy), and elsewhere. The potash deposits of Alsace, a little to the north-west of Mulhouse, are next in importance to those of Prussian Saxony. Sea salt is obtained from salt-pans on the western Mediterranean coasts and on those of the Bay of Biscay; rock-salt near Nancy.

Manufactures.—In point of value the most important are woollens and silks, the former carried on chiefly in the north, the latter in the Rhone valley. Water-power, which the French call “white coal,” is furnished especially by the Alpine torrents at Grenoble and elsewhere.

148. Foreign Commerce.—In recent years raw wool, silk, wine, coal and coke, raw cotton, and oil-seeds have made up together above one-third of the value of the special imports, and among other leading imports have been timber, hides and skins, and coffee. Four articles have made up about one-fourth of the value of the exports of native origin, namely, woollen and silk manufactures, wine, and raw wool. Among others of importance are haberdashery and apparel and raw and waste silk.

149. The raw wool imported into France is mainly derived from South America, and is partly introduced through Belgium. Oil-seeds are a rapidly growing import from India and other tropical countries, including the French settlements in West Africa and Indo-China. The United Kingdom and Belgium supply most of the coal and coke imported into France, the United Kingdom having the advantage of sea-carriage (**18, 104**), and Belgium that of canal and river communication (**144**) with the chief manufacturing regions of northern France. The countries with which the foreign commerce of France is mainly carried on are the adjoining countries of Europe, the United

Kingdom, being first both in exports and imports. It receives about one-fourth in value of the whole exports. The United States now ranks second among the countries supplying the imports. The large import of wine into France (from Italy, Spain, Algeria, &c.) dates from about 1875, when an insect called the phylloxera began to devastate the vineyards. The ravages of this insect have now been checked, and the import of wine is consequently diminishing. Another noteworthy fact is the great decline in the value of the export of silks since the period 1871-75.

150. Chief Industrial and Commercial Towns.

Capital.—Paris, on the Seine; like London, a city with a very miscellaneous industry. It has the advantage of a central situation in the great northern plain, with waterways, the Seine and its tributaries, leading in several directions, and now of course with a greater number of railways radiating from it.

151. Seats of the manufacture of—

Woollen Goods.—Lille, Roubaix, Tourcoing, Sedan—all near the north frontier, the first three quite close to the Franco-Belgian coalfield, and all having excellent water communication both with Belgium and the adjoining parts of France; Amiens, on the Somme; Elbeuf, on the Seine above Rouen; Troyes, on the upper Seine (hosiery). **Silks.**—Lyons (French, *Lyon*), on the Rhone, the chief seat of silk manufactures in the world, at the point where the traffic of the Saône-Rhone valley is joined by that from Switzerland and central Europe by way of the Jura and the Alps (Geneva; see 198); St. Etienne (ribbons) (147), west of Lyons; Avignon, on the Rhone. **Cottons.**—Rouen, on the Seine, St. Quentin, east of Amiens; Mulhouse and Colmar in Alsace; Sénonès, St. Dié, &c., west of the Vosges. **Linens.**—Lille, Cambrai, Valenciennes, and other northern towns. **Machinery.**—Creuzot (147), Lille. **Porcelain and earthenware.**—Limoges, on the Vienne, with deposits of coal, and one of china clay not far off; St. Cloud, a suburb of Paris (where Sèvres

Paris	2,900,000	Lyons	600,000
Roubaix-Tourcoing . .	200,000	St. Etienne	200,000
Lille	200,000	Rouen	115,000
Amiens	90,000	Mulhouse	100,000
Troyes	60,000	Limoges	95,000

only French seaport on the North Sea. It is rapidly rising, has large imports of South American wool, and exports of the manufactured products of the district, including iron, beetroot-sugar, and oils. St. Nazaire, at the mouth of the Loire, is the outport of Nantes, with which it is now connected by a ship-canal, admitting vessels of 20 to 21 feet draught. La Pallice, the outport of La Rochelle, accommodates large vessels.

BELGIUM.

154. Area.—About one-eighth of that of Great Britain. The population is very dense in all parts of the country except the south-east (Luxemburg) and north-east (the sandy plain of the Campine in the provinces of Antwerp and Limburg). This high density is due, as in England, both to advanced manufacturing industry and advanced agriculture.

155. Surface and Communications.—The surface of Belgium is made up of a tableland in the south-east intersected by deep river-valleys, and sloping down to low flat plains in the north and west. The plains afford admirable facilities for inland navigation both by river and canal (**144**); and the Meuse, which traverses the tableland, is navigable to beyond the Belgian frontier. The weight of goods annually carried on the inland waterways is on an average only about one-ninth less than that carried by rail, notwithstanding the closeness of the Belgian railway network (see the table in the appendix). Moreover, the flatness of a large part of the surface so favours the use of the roads for long-distance traffic that, for example, laden wagons sometimes go from Brussels to Liège, a distance of sixty miles, or from Antwerp to Liège, a distance of seventy-two miles. Horse and steam tramways as feeders of the railways are numerous.

156. Products.—Three-fourths of the surface is in crops, bare fallow, and grasses, the principal crops being wheat, rye, and oats. Among the minor crops are beet, including sugar-beet, buckwheat, and flax. Flax is grown mainly in the district drained by the Lys, a left bank tributary of the Scheldt (Escaut), and the fibre obtained from it has long been known for its excellent quality, which is due to the circumstance that the district

referred to is remarkably free from lime salts, in consequence of which the water of the Lys is peculiarly well suited for the cleansing of the fibre (42). Courtrai is the flax market.

157. The principal mineral products of Belgium are coal and zinc. The place which this country holds relatively to others in the production of these is indicated elsewhere (74, 75). The region of production may be described as occupying the valleys which intersect the Belgian plateau from the eastern frontier near Aix-la-Chapelle to about the middle of the Franco-Belgian frontier, the principal valleys in this respect being those of the Sambre and Meuse, more especially that part of the Meuse valley which continues the line of the valley of the Sambre, together with a strip to the west of the Sambre. The carboniferous area is occupied by a large proportion of productive coalfields, the chief coal-mining regions being in Hainaut, near the French frontier, round Mons (the Borinage) and Charleroi, and in the Campine, south-east of Antwerp. The Belgian coal-seams are more difficult to work than the British. They lie on the average at a greater depth, and are not so continuous. Zinc is obtained at Moresnet, close to the eastern frontier between Verviers and Aix-la-Chapelle (Aachen). There are also productive lead-mines near Verviers. Some iron ore is mined in the province of Namur, but the great bulk of the iron ore smelted in Belgium is imported from the grand-duchy of Luxemburg and the north-east of France.

158. The manufactures, stimulated by the existence of this mineral wealth, as well as of one of the oldest industrial populations in Europe, are numerous and varied. Among textile industries those of linen and woollen yarns and tissues predominate. The linen manufactures are fostered by the local supplies of flax. The woollen manufactures are now fed mainly by supplies of foreign wool from the River Plate, London, and elsewhere, but are still chiefly carried on in the north-east, where of old the industry was connected with the wool-supplies derived from the neighbouring sheep-pastures of the tableland. The iron industries and glass-making (84) are pursued principally on or near the coalfields.

159. Foreign Commerce.—Grain, wool, raw materials, building wood and petroleum, and raw hides make up considerably

more than one-third of the value of the imports. Iron and steel, coal and coke, grain, glass and glass wares, linen, yarn and flax, raw hides, and machinery make up more than a third of the value of the exports. Among the countries with which the foreign commerce is carried on the neighbouring countries of Europe take the lead. The share of the United States in the import trade is rapidly rising. The principal language of commerce is French, though more than half the people (nearly all those living in the west and north) speak Flemish.

160. Chief Industrial and Commercial Towns.

Capital.—Brussels (French, *Bruzelles*), in Brabant. It carries on a very varied industry and commerce, which must be greatly increased by the completion of the works begun with the view of making it a seaport. Malines (Flemish, *Mechlin*) is the chief railway centre, and is noted for its lace.

Seats of the manufacture of—

Linens.—Ghent (French, *Gand*), Tournai, Courtrai, and other towns in or near the flax-growing region. **Woollens.**—Verviers, Liège. **Cottons.**—Ghent. **Iron, iron-wares.**—Liège and Seraing, Charleroi and Mons in Hainaut. **Machinery.**—Liège and Seraing. **Glass.**—Charleroi, Mons, and other towns on the coalfields. **Soda.**—Antwerp, which has immense works for the supply of the glass factories.

161. Seaports.—Antwerp (French, *Anvers*), a strongly fortified town on the right bank of the Scheldt, a little above the head of the deep estuary of that river in nearly the same latitude as London. It is the centre of an immense inland as well as oceanic navigation. Ships of 30 feet draught can lie alongside of its quays. Ghent, at the confluence of the Lys and Scheldt, made a seaport by means of a canal from the estuary of the Scheldt, deepened in 1913 to 29 feet. Ostend, on the coast of West Flanders, connected by a small ship-canal with the old seaport of Bruges, which, however, has had since 1900 a much better connection with the sea by a canal running northwards. This canal (over 26 feet deep) has its sea-end at the new port of Zeebrügge, which is now connected with Harwich by train ferry.

Brussels (with suburbs)	840,000	Antwerp	.	.	.	295,000
Ghent	170,000	Bruges	.	.	.	50,000
Liège (with Seraing)	165,000	Malines	.	.	.	60,000

It may bring back to this decayed but once glorious city some of the prosperity which it enjoyed in the Middle Ages, when it was joined to the sea by a navigable channel which became silted up about the end of the fifteenth century.

HOLLAND OR THE NETHERLANDS.

162. Area.—About one-seventh of that of Great Britain. The **population** is densest in the west.

163. Surface, Products, and Communications.—Holland is mainly an industrial, agricultural and commercial country. It has no highland region, and little of the mineral wealth that characterises the highland region of Belgium. In the eastern provinces of Drenthe and Overijssel, a large part of the surface is marshy and occupied by peat moors, which considerably reduces the area available for crops and pastures. The whole extent of land capable of being so utilised is little more than three-fifths of the entire area ; but, on the other hand, a large part of the agricultural region is of very exceptional fertility. This is especially the case with those parts, chiefly in the province of Zeeland and Holland proper, which lie below the level of the sea and are protected from inundation by dykes.¹ The soil of such enclosed areas (*polders*) is naturally moist, and produces **rich pasture grasses**, so that horses and cattle (44) are very numerous, and the cattle yield abundance of **milk**. By the use of electric-, oil-, and steam-driven machines many of the polders have been sufficiently drained to yield crops. The crops of Holland are similar to those of Belgium. The **waterways**, natural and artificial, are of greater relative importance than in any other European country.

164. In manufacturing industry Holland formerly had a high reputation. The making of textiles, iron and steel wares, machinery, and artificial silk are among the leading industries ; shipbuilding is important. In recent years the Netherlands claim to have supplied their industries with coal from the mines of southern Limburg in the extreme south-east of the country,

¹ The Zuider Zee was separated from the North Sea in 1932, and is now called IJsselmeer. Over 500,000 acres are being reclaimed from the lake.

part of the great coalfield extending from the west frontier of Prussia to the neighbourhood of Antwerp in Belgium.

165. Foreign Commerce.—Holland has stood in the front rank of commercial nations from the very beginning of its separate existence (1579), but in examining the list of its special imports and exports it must be borne in mind that the products of the extensive colonial possessions of the country are included under the head of special commerce (3). In the returns of recent years, gold and silver, raw and manufactured textiles, iron and steel of all kinds, and coal figure among both the most valuable exports and the leading imports. Other important imports include cereals and flour, timber, oil-seeds, mineral oil, and coffee; and the principal exports, in addition to those named above, are dairy products, paper, tin, manures, and skins. Cheese, butter, and margarine are really the chief exports of Dutch origin.

The neighbouring European countries take the lead in the foreign commerce of the country. The Dutch East Indies rank fourth or fifth among those furnishing the imports. The language is Dutch, which is almost identical with Flemish, and closely resembles English in some respects and German in others.

166. Chief Industrial and Commercial Towns.

Capital.—The Hague (Dutch, *Den Haag*), in South Holland.

Cotton and Linen Manufacturing Towns.—Enschede, Almelo, and Hengelo in Overijssel, Tilburg in North Brabant.

Inland Centres of Trade.—Haarlem in North Holland (flower and Dutch bulb trade), Leiden, Delft, in South Holland, Utrecht, and Groningen, in the provinces of the same name.

167. Seaports.—Amsterdam, in North Holland, the commercial capital; the port formerly entered by the Zuider Zee, but since 1877 by a ship-canal from the North Sea at IJmuiden¹ (Ymuiden). Since 1892 the Merwede Canal has enabled large ships to reach the Rhine from Amsterdam. As an industrial town Amsterdam is noted for its diamond-cutting. Rotterdam, standing on the common mouth of the Rhine and Maas (Meuse),

The Hague.	.	.	435,000	Groningen .	.	.	105,000
Haarlem .	.	.	120,000	Amsterdam .	.	.	750,000
Leiden .	.	.	70,000	Rotterdam .	.	.	600,000
Utrecht .	.	.	155,000				

¹ IJ pronounced like the English I.

is the chief seaport, and owes this importance chiefly to the improvements in the navigation that have been made both upwards and downwards. Downwards it has since 1872 been connected with the sea by a ship-canal (the "New Waterway").¹ Upwards it has benefited chiefly by the great improvements of the Rhine (172). The Hook of Holland, at the mouth of the New Waterway, has now a service of rapid passenger steamers with Harwich in England. Flushing (Dutch, *Vlissingen*), in Zeeland, on the estuary of the Scheldt, on the mail route from England to Holland and North Germany. Schiedam, with an extensive gin trade, west of Rotterdam. Dordrecht, south-east of Rotterdam.

LUXEMBURG.

168. This state (of smaller extent than the county of Durham) is a grand-duchy lying to the south-east of Belgium, and forming part of the same river-furrowed tableland to which the adjoining parts of Belgium and Germany belong. It produces in the extreme south much of the iron ore smelted in Belgium, France, and Germany, as well as locally. It forms a part of the French Customs Union, and the customs frontier with Belgium was suppressed early in 1922.

NORTH CENTRAL EUROPE—THE GERMAN REALM, DANZIG, POLAND.

1. THE GERMAN REALM.

169. Area.—The German Realm² is almost three times as large as Great Britain, with a population about 40 per cent. more numerous. In March 1938 Germany absorbed Austria (201–204).

As a commercial unit the German Realm, or rather the Economic Union (*Wirtschaftsgebiet*) is under the control of the Legislature (*Reichstag*). Till October 1888 the old Hanse towns

¹ This channel is constantly being improved, and vessels drawing 30 feet can now reach the port at high-water spring-tides.

² The German Republic, which succeeded the Empire after the revolution of 1918, retains the official designation of *Das Deutsche Reich* (the German Empire), but the term Realm seems worthy of adoption.

of Hamburg and Bremen remained outside of this Union, but they have been completely incorporated since 1906.

170. Surface and Communications.—The great plain, including the detached portion of East Prussia, which makes up the north and the greater part of east Germany is for the most part of but slight fertility, and endowed with little mineral wealth, except here and there salt. It is thus on the whole a region of low density of population. The remainder of the Realm consists mainly of hilly country and tablelands, and has for the most part a density of population as high as that of the south-east of England, with a few smaller tracts in which the density reaches or approaches that of the English and Scottish manufacturing districts. This higher density is due partly to the more fertile soil and more favourable climate of the sheltered valleys, partly to mineral wealth and manufacturing industry. The south-east of the western half of the realm, a region occupying fully the half of Bavaria, and composed in large part of a bleak tableland with a poor soil and without mineral wealth (except once more salt), has as sparse a population as the northern plain. The height of this tableland is about 1000 feet lower than that of France (Munich, 1700 feet : comp. 142).

171. The mountains of Germany are mainly on the southern frontier, and for the most part consist of comparatively short ranges, with breaks which have admitted of railways being pierced through them with economic advantage at no great distance from one another. Of these short ranges the Erzgebirge present a serious barrier to communication, not so much on account of the distance for which the railway connection is broken as on account of the fact that they lie between the most densely peopled parts of Saxony and Bohemia. The Bohemian Forest on the south-west of Bohemia has two railways across the range, in addition to the communications through the gap at its northern end between it and the Erzgebirge. The Sudetes on the south-west of Silesia are also a serious railway barrier, and several railways converge to the opening known as the Moravian Gate between the south-eastern extremity of these mountains, and the Carpathians. The Harz Mountains in western Germany, entirely within the frontier, are still uncrossed by any railway for a distance of sixty miles. But the

Alps, on the southern frontier of Bavaria, and in Switzerland and Austria, are the most serious of all the mountain hindrances to German commerce (199, 200).

172. In the plains and valleys the natural and artificial waterways are of great value to the commerce of Germany. The Rhine, the Elbe, the Oder, and the Vistula are all navigable to the neighbourhood of the German frontier or beyond it; the Fulda and Werra, the two headwaters of the Weser, to about lat. 51°; the Danube from Ulm. For steamers the Danube is navigable from Ratisbon. The rivers of the northern plain are connected by numerous canals. The navigation of the Rhine is connected by canal with those of the Rhone and Seine basins (144). With the Danube it is connected by the celebrated Ludwig's Canal, which joins the head of navigation on the Main, the chief tributary of the Rhine on the right bank, to the main stream of the Danube, by way of the Regnitz and Altmühl.¹ But the greatest waterway in Europe is the Rhine, especially since the improvements completed in 1899, by which it has been made possible for boats of 2000 tons burden to reach Mannheim (at the confluence of the Neckar), and barges of 1000 tons can reach Basel. Large numbers of sea-going vessels now ply to Cologne. Next in importance to the Rhine is the Elbe, which allows vessels of 800 tons to cross the German frontier into Bohemia (191). By means of a canal round Breslau, opened in September 1897, vessels of 400 tons are enabled to reach upper Silesia from Stettin or Berlin. The eastern rivers are largely used for the floating of timber.

173. A ship-canal, known as the Kiel (or North Sea and Baltic) Canal, completed in 1895 and enlarged in 1914, crosses the south of Jutland between Brunsbüttel on the lower Elbe and

¹ A canal is projected to link the Main tributary of the Rhine with the river Danube near Ratisbon. The highest part to be crossed (1200 feet) will be overcome by a series of forty-two locks worked from an artificial lake at the summit, which will be constantly filled by water from the river Lech in an aqueduct about sixty miles long. These locks will also be water-power stations providing, by means of turbines, 400,000 horse-power, the equivalent of 3,000,000 tons of good coal. The canal will be sufficiently deep, and the upper portion of the Danube will be deepened, to carry ships of about 1500 tons displacement. The total length of canal and canalised river will be nearly 400 miles. In addition to providing a deep waterway across Europe, it will admit of the easy exchange of the industrial products of the Ruhr basin for those of the agricultural lands of the lower Danube and the Black Sea.

Holtenau on Kiel Harbour. It allows of the passage of vessels of any size; its depth is 36 feet. The only locks are one at either end, and that at the eastern end is seldom closed, while that at the western end is kept open for three or four hours in every tide. Its total length is 61 miles, and it effects a saving in distance of 237 miles, in time of three days, for sailing-vessels, and twenty-two hours for commercial steamers, from the mouth of the Elbe, and a saving of greater or less amount for all North Sea ports to the south of the Tyne.

174. Climate.—In respect of climate Germany is less favourably situated than France, not only through being farther north, but also through being farther east (8), and on account of the high elevation of a large part of the south-west, that is, the region with the best climatic position both in latitude and longitude. The districts with the best climate are the valley of the middle Rhine (that is, the plain between the river and the Black Forest), and the valleys of the three chief tributaries of the Rhine, the Neckar, Main, and Mosel (Moselle).

175. Agricultural Products.—This difference in climate results in a difference in the crops. In Germany, cultivation has been rapidly extended and improved. The area under corn-crops is less than in France, and the crops are less valuable than those of the latter country. **Wheat** (including spelt) occupies about 4 per cent. of the surface; **rye**, the chief bread-plant, nearly 11 per cent.; **oats** about 8 per cent. Among green-crops by far the most important in extent of ground occupied are potatoes, which cover about seven times as large a surface as in the United Kingdom. Though **vine-cultivation** (40) reaches in Germany the most northerly limit in the world (about $52\frac{1}{2}^{\circ}$ N.), the extent of ground in vineyards (chiefly in the sheltered valleys of the south-west) is less than one-sixteenth of the area so occupied in France. The noted Taunus wines (hock, &c.) are the produce of the hill-slopes in the neighbourhood of Wiesbaden, the slopes that look down on the valleys of the Main and middle Rhine from the north. The only two crops in which German agriculture takes the first place on the mainland of Europe for quantity are **sugar-beet** and **hops** (41). Sheep yielding wool of the highest quality are reared in Silesia and the kingdom of Saxony. See also 45.

176. Minerals.—In mineral produce, on the other hand, Germany takes a very high place, ranking amongst European countries next after the United Kingdom in total value of production. Among the minerals, coal (74) and iron (75) are the first in importance. The chief coal-basins are that of the Ruhr, on the right bank of the Rhine, in the provinces of Rhineland and Westphalia, where Dortmund and Bochum are the chief coal-mining towns and Gelsenkirchen, on the western border of Westphalia, a few miles north-east of Essen and north-west of Bochum, the chief centre of coke production; that of the Saar (a right bank tributary of the Moselle) lying to the north of Alsace¹; that of Zwickau and Lugau, in the republic of Saxony, at the base of the Erzgebirge; that of upper Silesia,² in the extreme south-east of the province, and that of lower Silesia, a smaller coalfield to the south-west of Breslau. Lignite is abundant in Prussian Saxony and the Thuringian States, where it has given rise to a large paraffin and mineral oil industry, and likewise furnishes fuel for the numerous sugar-refineries of the district. Petroleum is produced in Hanover.

177. From 1894 to the time of the Great War the German Economic Union surpassed the British Isles in the production of iron ores. Within the realm these ores are found mainly in hilly country to the south-east of the Ruhr coalfield, where the three Prussian provinces of Westphalia, Rhineland, and Hesse-Nassau meet, and mines occur in all these provinces. The ores here are of better quality and richer than those of Lorraine (147), but are more costly to work. Other ores are found on the banks of the Oder near Breslau, but they are not of great value. The German iron industry depends most largely on the ores of Lorraine and Luxemburg (168). The facilities for inland navigation in the Rhine basin are of particular importance for the carriage of such heavy commodities as coal, iron ores, and grain.

178. Zinc and lead are obtained in Silesia and the Rhine Province, the latter also elsewhere. In Silesia, the centre of zinc (calamine) production is Beuthen, in the south-east of the province; in the Rhine Province, near Aachen (Aix), close to the zinc-producing district of Belgium. Copper is produced chiefly in the Harz, at Mansfeld, from an ore containing also

¹ See par. 147.

² Continued into Poland (194).

silver, and in the Erzgebirge (Saxony), **silver** in Saxony (Freiberg) and at Mansfeld ; **salt** in the Prussian province of Saxony, at Schönebeck and Stassfurt, the latter of which produces, besides rock-salt, potash salts, used as manure and for other purposes.

179. Manufactures.—All branches of manufacturing industry are vigorously carried on. The chief localities are mentioned in paragraphs 184–189.

180. Foreign Commerce.—Raw materials and semi-manufactured articles make up half the value of the imports. The principal commodities are raw cotton and wool, mineral oil, coffee, butter, copper, iron ore, timber, coal, and wheat. Among the exports manufactured goods are by far the most important class. Iron and steel, chemical products, coal, paper, cotton, woollen and silk (natural and artificial) goods, dyes, copper, glass and glassware, and coal are the articles of most value.

181. In 1931 the United States, the United Kingdom, Holland, France, and Italy stood first in supplying German imports, while the United Kingdom, Holland, France, the United States, and Italy were first among the countries receiving German exports. (Compare paragraph 116.)

182. Since the German Empire was constituted in 1871, down to about 1913, its foreign commerce has presented some noteworthy features. There was a pretty steady and rapid increase in the value of the raw silk and cocoons imported and the silk manufactures exported, and, till the end of last century, a still more rapid rise in the export of sugar. The rise of the silk industry, betokened by the first of these facts, was chiefly at the expense of France, and was largely brought about by the substitution of machinery for domestic production, and the manufacture of a cheaper kind of silks than those made on French looms. The growth of the sugar export was a consequence of the granting of bounties by the government on the export of this commodity. Under an international agreement the granting of such bounties ceased on September 1, 1903. The import tables have likewise shown a pretty steady rise in the amount of coal and raw cotton imported, and a rapid rise in that of grain and petroleum.

183. Among the causes that have helped to promote

German trade generally in recent years two may be mentioned. One is the advanced state of commercial and technical education, which, besides advancing German industry in other ways, enables German merchants to employ large numbers of well-qualified travellers to procure trade in foreign countries. The other is the construction of great Alpine tunnels. The most important of these, with reference to the commerce of Germany, is the St. Gothard (198), leading as it does directly from the most populous parts in the west of the realm, through some of the most populous parts of Switzerland to the most populous parts of northern Italy. The Arlberg tunnel in the west of the Tirol (201) is also of importance for German commerce, through establishing a connection between south-western Germany and Innsbruck.

Under the Peace Treaty of 1919 German territories in Africa and the Pacific have been ceded to the Allies.

184. Chief Industrial and Commercial Towns and Districts.

Capital.—Berlin, on the Spree, the capital also of the republic of Prussia, like London and Paris a town with a very varied industry. Though it acquired its large population chiefly through being the capital of the kingdom of Prussia and the German Empire, it is not without its advantages of situation. It is fairly centrally situated in the north German plain. Even before the time of railways it was connected by waterways with Hamburg and Stettin. The first canal connecting the Spree with the Oder was completed in 1668. Further, the obstruction to communication from north to south presented by the rivers flowing east and west between the Elbe and the Oder caused a great deal of traffic to cross the Spree at Berlin, where an island in the river facilitated the making of bridges. Railways and other modern improvements (172) have confirmed and extended these old advantages.

185. Towns engaged in textile industries.—Numerous small towns as well as larger ones carry on such industries on a considerable scale, but only the larger towns are here singled out. Water-power is employed in many small places among the mountains, as in the valleys of the Swabian Jura east of the Neckar. The district embracing the Ruhr coal-basin is as thickly studded

Greater Berlin 4,000,000

with manufacturing towns as Lancashire or the West Riding of Yorkshire. *Cotton*.—Augsburg in Bavaria; Gronau on the Dutch frontier near Enschede (Holland). *Wool*.—Aachen (French *Aix-la-Chapelle*) and other smaller towns in the west of the Prussian Rhine Province, on or near a small coalfield. *Silk*.—Krefeld, in the Rhine Province west of the Rhine, now the chief seat of silk-manufactures in Europe after Lyons. *Linen*.—Bautzen and other places in the south-east of the republic of Saxony, and also in the north-east of the Prussian province of Westphalia. *Jute*.—Brunswick (German, *Braunschweig*). *Lace*.—In all the towns and villages along the base of the Erzgebirge (Saxony). Other important manufacturing towns can hardly be identified with any one branch of this class of industries. Among these are the adjoining towns of Elberfeld and Barmen (cottons, including trimmings, woollens, silks, especially ribbons), in the Rhine Province, close to the Ruhr coal-basin; Chemnitz, Zwickau, &c., in the kingdom of Saxony on or near the coal-fields, at Breslau, Görlitz, &c., in Silesia (all producing cottons and woollens, some also linens); Stuttgart, in Württemberg (cottons, hosiery).

186. **Iron industries** are largely carried on at Essen, in the Ruhr basin, where the vast works of Krupp for the manufacture of cast-steel, cannons, rails, &c., are situated; at Solingen and Remscheid, the chief seats of German cutlery, in the Rhine Province to the south of the Ruhr basin. **Machinery** is manufactured at Berlin, Chemnitz, Breslau, &c. The following industries are also carried on on a large scale:—**Sugar-refining** at Magdeburg and Halle. **Chemical industries** at Ludwigshafen and other places on the Rhine, Stassfurt, Elberfeld, &c. **Leather industries** in Berlin. **Toy-making** in Nuremberg (German, *Nürnberg*). **Clock-making** at many places in the Black Forest. **Porcelain manufacture** at Berlin, Meissen (on the Elbe below

Augsburg	165,000	Görlitz	90,000
Aachen-Bürtscheid . .	155,000	Stuttgart	345,000
Krefeld	160,000	Essen	630,000
Brunswick	145,000	Remscheid	100,000
Elberfeld-Barmen . .	355,000	Magdeburg	295,000
Chemnitz	335,000	Halle	195,000
Zwickau	80,000	Nuremberg	395,000
Breslau	600,000		

Dresden, with the royal manufactory of "Dresden" china), Munich. Shipbuilding, now very important, chiefly at Stettin, Hamburg, and Bremen.

187. Inland centres of trade.—Breslau, in Silesia, with a large Russian trade; Munich (German, *München*), capital of Bavaria, now an important railway centre; Augsburg, Nuremberg, also in Bavaria; Dresden, on the Elbe, capital of Saxony; Leipzig, also in the republic of Saxony, chief centre of the German book-trade, noted also for its great fairs; Cologne (German, *Köln*), on the Rhine, in Prussia; Dortmund, in the Ruhr basin, Westphalia, the centre of the district that produces nearly half the coal annually raised in Germany; Mainz (French, *Mayence*), in Hesse-Darmstadt, at the confluence of the Rhine and Main, with a large wine-trade; Mannheim, in Baden, at the confluence of the Rhine and Neckar, the centre of the grain-trade of southern Germany, a trade largely carried on by river; Frankfurt-on-the-Main, a river-port of growing importance, formerly the chief, and still an important, centre of banking in Germany.

188. Magdeburg on the middle Elbe, and Breslau on the upper Oder, may both be compared with Berlin in respect of their situation. They are both, like Berlin, crossing-places, and at both the bridging of the river has been facilitated by islands dividing the stream. There is no ordinary road-bridge across the Elbe for 70 miles above Magdeburg or 70 miles below it. The fact that Magdeburg is situated at a sharp bend of the river also adds to its trade. It causes goods frequently to be shifted from land to river, or river to land at that point. The great fertility of the soil on the left bank of the Elbe round Magdeburg, now the chief sugar-beet district of Prussia, is another great advantage. The old bridges of Breslau have made it a great centre of trade between eastern and central Europe for hundreds of years.

189. Nuremberg has been famous for manufactures since the thirteenth century. Its industries were then encouraged by special privileges, but at that time its situation also gave

Munich	685,000	Dortmund	325,000
Dresden	625,000	Mainz	130,000
Leipzig	685,000	Mannheim	260,000
Cologne	700,000	Frankfurt-on-the-Main	540,000

it special advantages in the way of trade. Valuable commodities were then conveyed up the Danube in considerable quantity, and when these were afterwards sent down the Rhine valley, they were landed opposite Ratisbon, and the direct route thence to Frankfurt-on-the-Main passed through Nuremberg.

190. Seaports.—For the despatch and reception of its trans-marine exports and imports Germany is largely dependent on foreign ports—those of Belgium, Holland and France, Italy and Austria. None of its own seaports is so conveniently situated for the commerce of the chief mining and manufacturing region of the west as Antwerp or Rotterdam. There are very few German seaports with a sufficient depth of water for ships of the largest size. The only seaports with a depth of more than 25 feet are Hamburg and its outport Cuxhaven, Bremen and its outport Bremerhaven, and Emden at the mouth of the river Ems near the Dutch frontier. At Hamburg itself at mean tide the depth is 23 feet, and the rise of the tide adds from 3 to 5 feet. Alongside the quays at the adjoining port of Altona the depth is only 22 feet. At Cuxhaven the depth at low water is $26\frac{1}{2}$ feet. Bremen proper was long a seaport without ships, but the Weser has now been deepened to rather more than 26 feet at low water, while at Bremerhaven the depth is 35 feet. The harbour of Swinemünde, the outport of Stettin, the deepest harbour on the Baltic, is 24 feet deep.

191. In order of importance as regards the amount of shipping the chief seaports are Hamburg (including Altona and Cuxhaven), Bremen (including Bremerhaven), Stettin (including Swinemünde), Kiel, Lübeck. Hamburg and Bremen are the only two German seaports with a large American and other trans-oceanic commerce. Hamburg is the seat of an important steam-packet company, which takes its name from the town. Like Antwerp and Rotterdam, it has the advantage of inland waterways with a large traffic. By means of the Elbe, Havel, and Spree and connecting canals it communicates with Berlin, all the heavy traffic between these two cities following that route; by means of the Elbe and Moldau it has steam com-

Hamburg-Altona	. 1,305,000	Kiel	215,000
Bremen . . .	. 295,000	Lübeck	120,000
Stettin . . .	. 255,000		

munication even with Prague in Bohemia. The fact that the peninsula of Jutland formerly lengthened the voyage from the Baltic to the English Channel caused much of the traffic of eastern and south-eastern Germany with western ports to converge upon Hamburg, and the Kiel Canal has not yet done much to divert this traffic. Besides the Hamburg-American steam-packet company referred to above, it is the seat of several other important lines of steamers. Bremen is the seat of the North German Lloyd Shipping Company, and shares with Hamburg a large emigrant traffic.

192. The principal Baltic ports in order from west to east are Kiel, Lübeck, with Travemünde, on the inlet that receives the river Trave, Rostock on the Warnow, Stralsund, opposite the island of Rügen, Stettin, the seat of the Baltic Lloyd Shipping Company and the nearest seaport to Berlin, and Königsberg on the Pregel (Frisches Haff), with a large export trade in timber and agricultural products. Lübeck is so situated as to bring a large part of western Germany, and even of Bohemia, into connection with the Baltic. Much of this trade, however, has been taken away by the opening of the Kiel Canal. On the other hand, the trade of the port was greatly benefited by the opening in 1900 of the Elbe-Trave Canal, 8 feet deep, connecting the Elbe with this port. Kiel is not only a busy seaport, but also an important station of the German navy, and Wilhelmshaven on the Jahde, west of the mouth of the Weser, is solely used for this purpose. All the Baltic ports are closed by ice in winter, the closing of the port lasting longer the further east it lies (8). The navigable channels of the Elbe and the Weser are kept free by ice-breakers.

2. DANZIG.

193. The Free City of Danzig, about the size of Worcester-shire, but with a slightly smaller population, was created by the Treaty of Versailles. The State embraces the port of Danzig together with the fertile and densely-peopled delta of the Vis-tula, besides a small area on the west and half of the Frisches

Free City of Danzig 410,000

Haff on the east. As the main outlet for the Vistula basin it carries on a trade similar to that of Königsberg. Since January 1, 1922, Danzig is a unit in the Polish customs administration.

3. POLAND.

194. Area and Population.—The republic of Poland, created by the Treaty of Versailles, is about $1\frac{3}{4}$ times the size of Great Britain, the population about one-third less.

Surface and Products.—Apart from the Carpathian mountains the surface is for the most part composed of low plains. The whole area contains a large proportion of arable land, but this is especially true of the middle latitudes, where wheat, rye, and sugar-beet are largely cultivated. An extensive area round Poznan on both sides of the Warta, but chiefly to the south, has more than sixty per cent. of the surface under the plough. The north-west, however, has considerable tracts of poor land under coniferous forest. The south-west is important for its mines of coal, iron, and salt, and the south-east has rich oil wells. The coal-mines are found in outlying parts of the Upper Silesian coalfield, round Dombrovo. The iron deposits of minor importance are in or near the Dombrovo coalfield, partly also, along with copper, in the south-east. The salt-mines are those of western Galicia—Wieliczka and Bochnia to the west of Cracow; there are important zinc works at Krolewska Huta; the chief oil wells are those of Drohobycz, which belong to the State.

195. Foreign Commerce.—The leading exports are coal and coke, zinc and other metals, timber, dairy produce, textiles, meat, and beet sugar. The chief imports are chemicals, raw and manufactured cotton and wool, hardware, and machinery. Trade is carried on principally with Germany, Britain, Austria, and Czechoslovakia.

196. Industries and Towns.—Poland turns out large quantities of manufactured goods. Its extensive forests supply the material for the manufacture of paper pulp and paper. A variety of manufactures are carried on at its two chief Vistula towns of Warsaw, the present capital, and Cracow, a much earlier capital,

Warsaw	.	.	.	1,178,000	|	Cracow	.	.	.	221,000
--------	---	---	---	-----------	--	--------	---	---	---	---------

as well as Poznan. Warsaw, the head of steam navigation on the Vistula, has on an average 305 days in the year ice-free. But the chief seat of manufactures, especially of textiles, is Łódź, situated 88 miles west-south-west of Warsaw. The growth of Łódź is the result of settlements of German (Saxon and Silesian) artisans and industrialists, due to a series of Government decrees of the years 1816 to 1833. The principal port is Gdynia, 12 miles north of Danzig and connected by canal with the river Vistula.

THE ALPINE STATES—SWITZERLAND, AUSTRIA.

1. SWITZERLAND.

197. Area.—Less than one-fifth of the size of Great Britain.

Surface and Communications.—Five-sevenths of the surface is divided between the Alps and the Jura, and the great bulk of the population inhabit a tableland upwards of 1000 feet in height between these mountains. The nature of the surface presents great obstacles to internal communication between the populous tableland and various parts of the most sparsely peopled region, and also to communication with the frontier countries on the east and south. Not till the nineteenth century was there any carriage-road across the Alps, but now the Swiss Alps possess some of the finest mountain roads in the world. The first constructed was that made by Napoleon across the Simplon for the passage of his "cannon" from the valley of the upper Rhone to the banks of Lake Maggiore in Italy. This was completed in 1805, and by the year 1830 the road across the St. Gothard, between the valleys of the Reuss and Ticino, and those across the Bernardino, Splügen, Maloja, and Julier passes, had been added. Since 1882 a railway tunnel nearly 10 miles long has replaced the St. Gothard road connecting Milan in Italy with western Germany. In 1906 a still longer tunnel, $12\frac{1}{4}$ miles, was opened under the Simplon Pass, establishing the shortest connection between Milan and Paris (519 miles), and in 1913 this was supplemented by the Lötschberg tunnel through the Bernese Oberland, leading to Bern, and destined to make the

Łódź	.	.	.	605,500	|	Poznan	.	.	.	246,500
------	---	---	---	---------	--	--------	---	---	---	---------

shortest connection with northern France. A narrow-gauge railway under the Albula pass has connected Coire with the Engadine since 1903. The railways have been electrified.

198. Climate and Products.—The heavy rainfall promoted by the mountainous character of the country nourishes excellent pastures. Cattle-rearing is carried on in summer up to the height of 9000 feet, and this is the only branch of agriculture that yields considerable export products (living animals, cheese, condensed milk). For the prosecution of its manufacturing industries and handicrafts Switzerland, though possessing little coal or iron, has certain advantages of its own, the principal being the abundance of water-power, afforded by the torrents of the Alps, and the abundance of cheap skilled labour, to keep up the quality of which the government has done so much in the way of providing efficient technical education. Apart from watch-making the great manufacturing region of Switzerland is in the north, which, though lacking in coal, has the great advantage of lying on both the great through routes connecting central Europe with the Mediterranean, by Geneva and the St. Gothard tunnel respectively.

199. Foreign Commerce.—Silks, cottons, machine embroidery, trimmings, watches, machinery and locomotives are the manufactured articles for which Switzerland is most noted. These articles make up more than 60 per cent. of the value of the exports. Besides cheese and condensed milk, already mentioned, there is an export trade in breeding stock and store cattle, balanced by a large import of fat cattle from Italy and Austria. The four surrounding countries, Germany, France, Italy, and Austria, take the lead in supplying the imports (chiefly articles of food and enjoyment and the raw materials of manufacture), but the United Kingdom stands second and the United States third among the countries that receive the exports, Germany being first and France fourth. Cotton manufactures of one kind or another are exported even to the United Kingdom to the value of more than one million sterling annually. Swiss watches and other manufactured articles are sent even to India, China and Australia, the United States and South America. The language of commerce is different in different parts. Seven-tenths of the people speak German, two-tenths French, and one-twentieth

(chiefly in Ticino) Italian. German is the prevailing language in all the towns mentioned in the next paragraph except Geneva, Lausanne, Neuchâtel, Locle, and La Chaux de Fonds, in all of which French predominates.

200. Chief Towns.—Capital.—Bern, on the Aar.

With textile industries.—Zürich, including suburbs (silks and cottons), Basel (French, *Bâle*), on the Rhine in the north-west (manufactures chiefly silk ribbons), St. Gall and Appenzell in the north-east (embroideries). Basel lies at the angle where the Rhine valley communicates with the Saône-Rhone valley through the gap between the Vosges and the Jura—the so-called Burgundy Gate. **Watch-making towns.**—Locle and La Chaux de Fonds (Neuchâtel) in the Jura. **Centre of the watch-trade.**—Geneva (including suburbs), at the outlet of the lake of the same name in the south-west of the country. Zürich, Bern, Basel, Geneva, Lausanne, and Neuchâtel are important educational centres.

2. AUSTRIA.

201. Surface and Communications.—The Alps fill the south-western portion of the republic. The chief Austrian **Alpine tunnels** are the Brenner, Semmering, and Arlberg. The railway through the Brenner tunnel, connecting the valleys of the Inn and Adige, serves as the direct route between the populous regions of Bohemia and northern Italy. That by way of Udine, in Venetia, and Klagenfurt, in Carinthia, through the Semmering tunnels, on the frontier of Lower Austria and Styria, is as yet the shortest route between northern Italy and Vienna. The Arlberg tunnel, in the west of the Tirol, connects the basins of the Inn and Rhine, and establishes the shortest railway connection between Vienna and northern Switzerland, as well as the south-west of Germany. The river Danube is navigable throughout the country.

202. Agriculture is carried on more extensively in the Danubian tracts of Upper and Lower Austria than elsewhere, these parts having the only considerable areas suited to wheat

Bern . . .	110,000	Basel . . .	150,000
Zürich . . .	250,000	Geneva . . .	145,000

and maize as well as coarser cereals. The Alpine provinces are predominantly engaged in forestry, together with the cultivation of rye and oats and the rearing of cattle, which is here carried on as in Switzerland (198). The forests are mainly in the hands of small owners and are for the most part badly managed.

The chief minerals are iron ore and salt. True coal is almost entirely wanting, but lignite abounds, and there are abundant water-power resources. In northern Styria, at **Eisenerz**, a little to the south-east of the northerly bend of the Enns, is the chief Austrian deposit of **iron ore**. More valuable kinds of iron ore are produced in the north-east of the neighbouring province of **Carinthia**, which ranks next to Styria in the production of this mineral. The smelting of iron and the making of steel (75) are carried on most largely at Steyr in Upper Austria and at **Dona-witz** in Styria. **Salt** is abundant in the **Salzkammergut**, in Upper Austria; **china clay** half-way between **Linz** and **Passau**.

203. Foreign Commerce.—Timber, ores, chemicals, paper goods, furniture, and fruit are exported in exchange for food-stuffs, coal, manufactured goods and raw materials. Trade, formerly carried on mainly with Great Britain, Czechoslovakia and Germany, is now controlled by Germany.

204. Towns.—Vienna, the capital, situated partly upon the foot-hills of the Alps, at the last end of the narrow valley through which the Danube flows, is a natural market between the Hungarian plains and southern Germany. Silks, machinery, and wooden wares may be specially mentioned among the Viennese productions. **Graz** has iron and other industries.

SOUTH-EASTERN EUROPE.

CZECHOSLOVAKIA, HUNGARY, YUGOSLAVIA, ROUMANIA.

205. The peoples of this area are branches of the great Slav family in Czechoslovakia and Yugoslavia, the Magyars of Hungary, and the Roumanians, who claim descent from Roman settlers of the time of the Empire.

Vienna . . . 1,860,000 | Graz . . . 155,000

The prevailing languages of commerce are German and Italian. German is the prevailing language in the Alpine lands north of about $46\frac{1}{2}^{\circ}$, in the neighbourhood of the mountains on the western and northern borders of Czechoslovakia, and is the language of the educated in many of the chief towns elsewhere, as in Budapest, Brünn (Brno), Olmütz (Olomouc), Iglau (Jihlava). Italian is the dominant language in the Adriatic seaports. In Hungary and part of Transylvania the Magyar language is spoken; in the remainder of Transylvania, partly German and partly a dialect of Roumanian. Elsewhere various Slavonic languages prevail. The internal trade in the east of the area is mainly in the hands of Jews, most of whom speak German.

206. The surface is mountainous in the north, east, and south, partly also in the west, but these mountains enclose the great plains of the Danube, and the kingdom of Roumania also comprises broad plains outside of this mountain encirclement. These mountains still form barriers to communication, especially in the eastern half of the area. In the western half the provision of railway facilities was stimulated, as between opposite sides of the Pennines in England, by the great density of the population on both sides.

Down to recent times the Carpathian Mountains, separating Hungary and Transylvania from Galicia, Russia, and Roumania, had much longer intervals uncrossed by rail than the Alps, but this was not because they are more difficult to cross, but because the more populous regions on the opposite sides yield for the most part similar products, and the wide intervening belt yields little but timber.

207. A very important feature of the geography of this region is the easy access from the great Danubian plains to the most important valleys of the Balkan Peninsula. The approach to two valleys leading to the Aegean Sea is made by the Morava, a right bank tributary of the Danube, joining the main stream a little below the confluence of the Save. A southern route continuing the ascent of this valley leads to a water-parting only 1750 feet in height, and then down to Salonika, by the railway route along the valley of the Vardar. A side valley leads from Nish on the Morava eastwards up the Nishava and then

across a pass 2400 feet in height to the valley of the Maritsa, and so to Constantinople and Dede Agach.

208. Rivers.—The navigation of the Danube (172) is greatly impeded by the rapids at the submerged reef known as the Iron Gate, as well as at intervals over a distance of 60 miles above the Iron Gate proper, but the hindrances to navigation have been greatly reduced. Works for the regulation of this part of the river, involving the establishment of a permanent channel of about 10 feet in depth, were completed by the Austrian government in September 1896. On the lower Danube great improvements have been effected by a European commission appointed in terms of the Treaty of Paris in 1856. The Sulina mouth of the river has been straightened and deepened to a minimum of 18 feet in the main channel as high as Braila. Vessels of 7000 tons burden can now ascend to this port. Much dredging is required to maintain this depth. The freedom of navigation for all sea-going vessels, of whatever nationality, is upheld by international treaty.

Of the tributaries of the Danube, the Tisa (Theiss), whose windings have been greatly reduced by canalisation, is navigable for steamers to Tokay; the Drave to the confluence of the Mür; the Save to Sisek, at the confluence of the Kulpa. With regard to the Elbe and Moldau navigation see **172, 191.**

209. As to climate, the inner lowlands are more especially subject to those extremes of temperature which become more characteristic as we go eastwards. Even in southern Roumania the winter temperatures are very low. A striking result of the physical structure of the Balkan Peninsula on the route to Salonika is that it allows piercingly cold winds to blow with great violence down the valley of the Vardar—the now well-known Vardar wind. On the pusstas, or vast Hungarian plains east of the Danube, so great is the summer heat, and so rapid consequently the evaporation, that though summer is the season of greatest rainfall, these plains, which in winter are a succession of morasses or storm-swept snow-wastes, present during the hot season the appearance of withered deserts.

1. CZECHOSLOVAKIA.

210. Extent.—This republican state is made up of the former Austrian crownlands of Bohemia (the lozenge-shaped area forming the upper part of the Elbe basin) and Moravia (the adjoining territory on the east), the greater part of Austrian Silesia, and the mountainous or hilly tract which before the Great War formed northern Hungary, along with, on the south, a small strip of the Hungarian plain with a considerable Magyar population (205). Its western and northern frontiers are thus in a large measure natural, following the crest of mountain ranges, and everywhere, except in Slovakia, they include within the frontier a large German population, which is estimated to make up about 25 per cent. of the total. The Slovak portion of the state is the poorest, rich in nothing but minerals, although these include the precious metals, besides iron and salt.

211. Products.—The richest agricultural district is that towards the north of Bohemia drained by the Elbe and its left bank tributary the Eger. Here, in addition to all the cereals of the temperate zone, are grown sugar-beet, hops, the vine, tobacco, flax, and hemp. Sugar-beet is also largely cultivated in the valley of the Morava (March).

The main deposits of coal lie to the west and south-west of Prague (Praha), those of lignite immediately to the south of the Erzgebirge. True coal is also mined in the Teschen district formerly part of Austrian Silesia. Iron ore is found near Prague, but not in large quantity, so that the Bohemian iron industry is now likely to suffer from being severed from the Styrian ores. A large proportion of the lignite produced and a smaller proportion of the coal are exported to Germany by the Elbe, the lignite being shipped at Aussig (Usti), the point up to which the river has been made navigable for vessels of 800 tons. Bohemian glass is manufactured chiefly in the Bohemian forest (where potash is obtained by burning wood—84), common glass in the north of Bohemia.

212. Commerce.—Since the establishment of the republic, glass, sugar, timber, and coal have been the most valuable exports; cottons, cereals, and woollens the chief imports. Considerations of the natural wealth of the country suggest that its

trade will develop considerably. Germany, Austria, and the United States supply most of the imports; the first two receive the bulk of the exports.

213. Industrial Towns.—Prague, the capital, at the head of navigation of the Moldau for large boats, has various manufactures. Reichenberg (Liberec), Brünn, Iglau (Jihlava), and Troppau (Opava), manufacture woollens; Pilsen (Plzen), textiles and brewing; Eger (Cheb) and Gablonz, near Reichenberg, glass; Carlsbad (Karlovy Vary), porcelain. Pressburg (Bratislava) is an important port on the Danube.

2. HUNGARY.

214. Surface.—This ancient kingdom, at present under a regent, is confined to the plains of the Danube where the population is predominantly Magyar, but not without admixture. These plains, known in Hungarian as the Alföld (i.e., "lowland"), formerly deserved the name of pusztas (209), or "desert," in a much greater measure than they do now, a great deal of reclamation having been carried on in recent years.

215. Products.—Agriculture, including the rearing of live stock, is the prevailing industry. The dry climate is well suited to the growth of wheat rich in gluten. Down to the time of the war both branches of agriculture were steadily improving. Manure was being more and more largely used and the average yield of wheat was increasing. Large quantities of agricultural machinery were in use, small cultivators uniting to purchase machines. Among agricultural specialties may be mentioned the wines derived from vineyards occupying old volcanic soils in the north. Great attention has been paid in recent years to improving the breed of the more important domestic animals, including the pig, and there are large government horse and cattle breeding establishments. Some coal is found within the angle of the Danube to the north-west of Budapest and also near Pecs, in the south-west, and a little iron near Szeged, on the Tisa opposite the confluence of the Maros, but there are no other important minerals.

Prague	.	.	.	850,000	|	Bratislava	.	.	.	125,000
Brünn	.	.	.	265,000	|	Pilsen	.	.	.	115,000

216. Commerce and Towns.—Grain, the principal export, is exchanged for manufactured goods. Budapest, situated on both banks of the Danube, is the capital. Tokay gives its name to a famous wine. Other towns, such as Szeged, are really agglomerations of villages.

3. YUGOSLAVIA.

217. Position and Surface.—This kingdom, known till 1929 as the Serb, Croat, and Slovene State, stretches from north-west to south-east through the Balkan Peninsula. It is mainly mountainous in the north-west and west: in the north-west traversed by the south-eastern members of the Alps with an east-west trend; in the west by the ranges of the Dinaric Alps, which trend from the north-west to the south-east, the eastern chains largely composed of carboniferous limestones, including in places steep and rugged dolomitic summits, the western composed of the cretaceous limestones of the region known as the Karst or Carso, an area presenting to view mainly expanses of grey naked rock with patches of soil of varying depth, generally thin, only in isolated hollows and, in spite of a heavy rainfall, without surface water, except where it emerges in springs from the base of characteristically fissured cliffs. These features extend into western Bosnia, but the north-east of that province is composed of a gently undulating, fruitful, densely peopled hill country, sinking gradually to the low level plains traversed by the Save, the Danube, and the Mur, all of which form in places parts of the boundary of the new state. The south-east of the kingdom is mountainous, but with fertile valleys and basins.

218. Agricultural Products.—The land under the plough is equal to little more than one-fourth of the surface, the proportion, however, rising to 68 per-cent. in the principal agricultural area, that known as the Vojvodina, made up of the eastern plains north of the Danube, to a large extent covered by loess. The arable land is found in isolated basins, the most important of which is that of Ljubljana (Laibach), about 25 miles in length by 6 in width, and more than 900 feet above the sea. Maize and wheat are the principal crops, occupying about the same extent

Budapest . . . 1,005,000 | Szeged . . . 135,000

of ground. Among other crops may be mentioned sugar-beet, hops, hemp and flax. Fruit trees and, above all, plums abound, and the vine is largely cultivated. Cattle are reared in the Alpine districts, horses chiefly in the Vojvodina, and pigs in great numbers in all the most populous parts of the state. Sheep and goats are most numerous in the Carso. Forests are most extensive in the Alps and in Bosnia. Dalmatia, the maritime tract of the kingdom, has all the products of a Mediterranean country with laurel thickets, groves of pines and cypresses, and the cultivation of olives, figs, oranges, and citrons.

219. Minerals.—The most important are coal, met with in various places, iron ore (magnetic) and copper, both in the north-east in the tract south and west of the Danube, lead to the south of Belgrade and north-west of Ljubljana (Laibach), salt in the north-east of Bosnia, and bauxite in Dalmatia. The principal coal-mines lie between Ljubljana and Agram (Zagreb) and furnish fuel to blast furnaces smelting imported ores in the Ljubljana basin.

220. Commerce and Towns.—The external commerce consists chiefly in the exporting of maize, fruits, timber, and copper. So far as it is not carried on by way of Belgrade, the capital of the kingdom, and the railways and waterways which radiate thence, it makes use of the foreign ports of Trieste, Fiume, and Salonika, on which the region has always been mainly dependent for sea-going traffic. Spalato is at present the only fairly active port belonging politically to Yugoslavia.

4. ROUMANIA.

221. Surface.—The mountains which divide the kingdom into two parts are themselves composed of two parts, contrasting with one another both in geological structure and in form. The portion running east and west, known as the Transylvanian Alps, is mainly composed of ancient, crystalline rocks with steep forest-clad slopes, while that whose trend in mainly north and south is composed of softer rocks largely denuded of forest, and generally lower in elevation. The pass of Predeal, nearly due

Belgrade	.	.	.	240,000	|	Ljubljana	.	.	.	60,000
Zagreb	.	.	.	185,000	|					

north of Bucarest, approximately marks the limit between the two sections.

222. The part of the country outside the mountains is again made up of two portions, which, though very far from equal in area, must be treated separately: a section on the left of the Danube and partly north of the Black Sea, formed of Moldavia, Wallachia, Bukovina, and Bessarabia; and the Dobruja, on the right bank of the Danube. The former section may be described as a continuation of the Galician plateau in the northern area, and of the Russian plain in the southern or Wallachian area.

223. The climate and products are similar to those of the adjoining part of Russia. Maize is the principal crop, as it is the chief food of the small peasantry occupying the numerous villages among the hills, whereas wheat is the great crop of the loess-covered plains, where it is grown mainly for export by large landowners using advanced agricultural machinery. The cultivation of wine and sugar-beet is spreading. Petroleum is produced along the face of the Carpathians, to the north-west of Bucharest, and to the south-west of Jassy, and the production is largely controlled by an English company called the Roumanian Oil Trust.¹ As to the Danube navigation see par. 208.

224. **Towns.**—The principal Danubian ports in Roumania are **Galats**, situated at the point where the Danube on receiving the Seret turns eastwards, and Braila (Ibraila), at the next bend of the river higher up. Besides Bucharest, the capital, the chief inland towns are Jassy, the capital of Moldavia, Ploieshti, Craiova, and Chisinau (Kishinef), the capital of Bessarabia.

225. The **Dobruja** is composed to the extent of about half of its area of uninhabitable and unhealthy marshes, mainly belonging to the delta of the Danube. **Wool** is a rising export. A **railway** from Bucharest crosses the Danube at Chernavoda and runs thence eastwards to Constantza, or Kustenji, its chief port.

Bucharest	630,000	Jassy	105,000
Chisinau (Kishinef)	190,000	Galats	100,000

¹ The production of petroleum in Roumania increased from 21,000,000 gallons in 1896 to 475,000,000 gallons in 1912 but reached only 40,000,000 in 1930. A pipeline has been laid along the railway route from Ploieshti to Constantza.

226. The interior or Transylvanian portion of the kingdom added after the great war is an intricate complex of forest-clad heights enclosing cultivated valleys and basins, with vineyards and orchards on the slopes enjoying a southern aspect. Forests occupy nearly 40 per cent. of the surface. The strip of plains abounding in cereal crops on the west is generally narrow, widest in the Banat. Cattle and sheep are numerous. The gold mines near the former royal smelting works at Zalatna, in about $46^{\circ} 10' N. 22^{\circ} 30' E.$, are the most productive in Europe next to those of the Urals. Coal and iron ore are both found in the Banat, where iron and steel works have for some time been in operation. Rock-salt and natural gas occur at several points.

227. Foreign Commerce.—Among the exports wheat, maize, and other grains rank first, but there is a large and growing export of oil-seeds and petroleum.

EASTERN EUROPE.

228. The former empire of the tsars has been broken up in consequence of the war into many states claiming independence, but which of those claims will ultimately be made good is so uncertain that it is inadvisable at present to accord them individual treatment. In any case the geographical unity of the former Russia in Europe within the limits assigned in this work to that continent, which exclude the whole of Caucasia, is sufficiently marked to justify its still being described under one head. Poland has already been described under the general heading of North Central Europe; and Finland, which had a separate customs frontier even before the war, has a separate paragraph, as it had in former editions of this book; but the other states are merely enumerated in this paragraph, in which also are given the abbreviations by which those states are referred to when mention is made of any place or region belonging to one or other of them. These states are Esthonia (E.), capital, Tallinn (Reval), occupying a territory inhabited by a people closely allied to the Finns on the south side of the Gulf of Finland, a state recognised by the Allied Powers and by Soviet Russia; Latvia (La.), capital, Riga, round the Gulf of Riga, to the south

of Esthonia, inhabited by Letts, who also speak a language distinct from the neighbouring Slavonic language spoken in Russia ; and Lithuania (Li.), still farther south, whose inhabitants are closely akin to the Letts, speaking the same language with only minor peculiarities ; claims Vilnius (Vilna) as capital ; present seat of government is Kaunas (Kovno). The remainder, forming the Russian Socialist Federal Soviet Republic, has, since the revolution of November 1917, its seat at Moscow, and theoretically derives its authority from *Soviets* or councils elected by the workmen, soldiers, and peasants of the country so far as its authority extends. It includes the Ukraine (U), capital Harkoff, and White Russia, capital, Minsk.

OLD RUSSIA.

229. Surface and Communications.—The surface of Russia, though mainly made up of one vast plain, and thus presenting scarcely any of the obstacles to communication such as we have had chiefly to consider in the case of the countries already treated, offers difficulties of another kind ; and these natural difficulties, together with other causes, have prevented Russia from acquiring to this day anything like adequate facilities for transport, and especially by land (see railway table in the appendix). The marshy character of a large part of the surface and the want of road-making material (both stone and wood being entirely absent throughout large areas in the south) have stood in the way of the construction of roads. For half the year the substitute for roads is, as usual in such regions, tracks formed by the repeated passage of wheeled vehicles, and apt to be rendered scarcely passable by bad weather. In winter a better substitute is found in the use of sledges.

230. The deficiency of roads is to some extent made up for by the abundance of the natural waterways and the ease with which they can be and have been connected by canals. The great majority of the rivers are navigable nearly to their source, many of them for a great distance by steamers. Nevertheless this means of communication is attended by various drawbacks, which will best be illustrated by a few particulars. No Russian river-port is on an average free from ice for more than ten months

in the year. Kherson, at the mouth of the Dnieper, in the latitude of La Rochelle in France, has, on an average, only 280 days in the year ice-free; Astrakhan, in about the same latitude, only 264 days; Rybinsk, the chief grain-port of the upper Volga, only 219 days; and Leningrad, 218 days. On the Dnieper, the principal waterway to the Black Sea, rocky **rapids** impede the navigation for a distance of twenty-three miles on that part of the river which flows from north to south (between Zaporozhe and Dnepropetrovsk) in the great bend which the stream makes to the east. Rapids also impede the navigation of the Dniester and Bug, and, above Leningrad, the much more important navigation of the Neva.

231. There are other drawbacks still. The Volga, which with its tributaries affords more than 7000 miles of inland navigation, does not furnish any direct connection with the ocean. Goods intended for the sea are landed at Stalingrad, at the point where the river turns south-eastwards to the Caspian, and are transferred by rail to the Don, a river that can be navigated only by steamers of very shallow draught. Of the projects for new canals now being urged forward the most important, perhaps, is that for a canal between the Don and the Volga, to put an end to the existing interruption between the navigation of the Volga and the outside world.

232. The extent of the water communication in Russia helped to delay the laying of **railways**, but railways now diverge from Moscow to all the chief ports, to various points on the western frontier, where connections are made with foreign lines, to Vladikafkas, at the end of the chief pass-road across the central Caucasus, and to Orenburg, near the European frontier south of the Urals. There is likewise a line of railway following the original trade-route across the Ural Mountains, from Perm in European Russia to Tyumen in Siberia, and this railway is now connected with another which crosses the Urals farther south, past Zlato-ust, the centre of iron-mining in the Urals, and is continued eastwards as the Trans-Siberian Railway (**296**).

A railway to the harbour of Alexandrovsk on the Murman coast in the north-west, which is kept ice-free all the year round

Dnepropetrovsk	235,000	Orenburg	125,000
Stalingrad	150,000		

by the warm water drifted northwards by south-westerly winds (8), was opened during the Great War.

233. Climate and Agriculture.—Russia lies in that part of Europe where the extremes of temperature are greatest and the rainfall on the whole least (8, 9). About half the entire area, in the north-east, east, and south-east, has a total rainfall for the year of less than 20 inches (98). Liability to drought makes the amount of the harvest extremely variable.

234. The nature of the climate puts a limit to cultivation both in the north and the south-east, and the whole of the arable land of **Russia proper** makes up only about 26 per cent. of the surface. A northern zone with little but reindeer pastures is followed to the south by a second zone chiefly occupied by vast forests (67); that again by a third, in which forests give place more and more to agricultural land, and finally disappear altogether. The region of **black-earth**, a soil of unsurpassed fertility which is spread over southern Russia in larger or smaller patches from the frontier on the south-west to the hills west of the Volga, is that on which most of the corn-crops of Russia proper are grown. Altogether this soil is estimated to cover one-fifth of the total area of Russia proper, but a large part of this area in the east extends into the region of those **steppes** which are so arid in climate as to be habitable only by nomadic tribes (Tatars and others). Of the grain-crops of Russia the most important is rye, which is produced to an amount about four times as great as wheat (32), and the second of the corn-crops in importance is oats. Flax (42) and hemp (43) are important crops in the Baltic republics, sugar-beet (41) in the Ukraine.

235. Minerals.—Though agriculture and forestry form the basis of by far the greater part of the export trade of Russia, the mineral wealth of the country is enormous, and its mining and manufacturing industries are rapidly extending. Coal and iron are both abundant. Coal (74) is found principally in three localities—(1) west of the Ural Mountains in a district to which a branch line proceeds northwards from the Perm-Tyumen railway; (2) in a district to the south and south-west of Moscow; and (3) in the valley of the Donets (U.), a right-bank tributary of the Don. The last-mentioned field is the largest of all, but as it lies in a sparsely peopled district, it began to be opened up only

late in the nineteenth century.¹ **Iron Ores** are obtained not only in the district of the Urals already referred to (232), but also in several districts to the south of Moscow, and now most abundantly at Krivoi Rog (U.), about a hundred miles north by east of Kherson. **Gold**, platinum, and copper are found in the neighbourhood of Ekaterinburg, east of the Urals; salt in the area below sea-level north of the Caspian, and in the Crimea; quicksilver about 100 miles N.N.W. of Taganrog.

236. Foreign Commerce.—In the commerce of Soviet Russia ores, metals and metal manufactures, raw cotton, engines and machinery, tea, foodstuffs, coal and coke, raw wool, rubber, and fish make up the largest part in value of the imports. Industrial products make up at least half the value of the exports, and corn, together with flax and linseed, wood, hemp, and raw wool, constitute about three-fourths of the total value. Germany and the United Kingdom take together about 50 per cent. of the exports, and the United States and Germany supply the same proportion of the imports.

237. Chief Industrial and Commercial Towns.—Moscow, the capital and the chief railway centre; varied manufactures are carried on. Kief (U.), on the Dnieper, centre of Russian sugar-refining; Kharkof (U.), one of the chief towns in the heart of the black-earth region; Saratof, on the Volga, with tobacco manufactures; Nizhniy-Novgorod, at the confluence of the Oka and Volga, with great annual fairs, at which the products of Asia and Europe are exchanged.

238. Seaports.—(a) On the Baltic: Leningrad, accessible to large ships only since 1885; Kronstadt, the former outport of Leningrad for large vessels; Reval (Tallinn) (E.), a growing centre of cotton imports; Riga (La.), on the Duna near its mouth; Ust Dvinsk, or Dünamünde (La.), the port for large shipping, at the mouth of the same river; Libau (La.); Memel,

Leningrad . . .	1,615,000	Nizhniy-Novgorod . .	185,000
Moscow . . .	2,410,000	Kronstadt . . .	65,000
Kief . . .	515,000	Tallinn . . .	130,000
Kharkof . . .	420,000	Riga . . .	380,000
Saratof . . .	215,000	Libau (Liepaja) . .	55,000

¹ The yield of this field in 1885 was about 750,000 tons; in 1912, 21,000,000 tons (about four-fifths of the total produced in Russia).

detached from Germany, is now the Lithuanian port of Klaipeda. (b) On the Black Sea: Odessa (U.), the chief grain-port of Russia, seat of the Russian Steam Navigation Company; Nicolaief (U.), on the Bug, Kherson (U.), on the Dnieper, both within the Ochakof Bar; Akerman, Sebastopol, Kerch. The deepening of the Ochakof Bar to 24 feet has caused the diversion of some of the trade of Odessa to Nicolaief and Kherson. (c) On the Sea of Azof: Taganrog, near the head of the sea; Azof and Rostof, on the Don near its mouth; Mariupol, outlet for the Donets coalfield. (d) On the White Sea: Archangel. (e) On the Caspian Sea: Astrakhan.

FINLAND.

239. Finland, till 1918 a part of the Russian Empire, is now an independent republic. It includes the Åland Isles. Its inhabitants are mainly confined to a strip on the south, and even there the density of population is small. Railway connection with Sweden was established in 1919. The products are similar to those of the neighbouring parts of Russia. Tammerfors (Tampere), an inland town, manufactures textiles largely by means of water-power. The capital and chief port is Helsingfors (Helsinki); Hangö (Hanko), on the Gulf of Finland, has a rapidly growing export of butter. The principal ports on the Gulf of Bothnia are Åbo (Turku), Björneborg (Pori), and Vasa (Vaasa). The language spoken at the ports is Swedish.

SWEDEN AND NORWAY.

240. The area of Sweden is nearly equal to twice that of Great Britain; that of Norway somewhat greater than that of the British Isles (88). The population in both is scanty (see table in the appendix).

241. Surface and Communications.—These two countries, which are now entirely independent, though they were under

Odessa	420,000	Taganrog	85,000
Nicolaief	105,000	Rostof	20,000
Kherson	60,000	Helsingfors	240,000
Sebastopol	75,000		

one king from 1814 to 1905, fall to be treated of together because they both occupy the Scandinavian peninsula, and hence have certain great physical features in common.

The greater part of this peninsula is made up of a high tableland furrowed by deep and narrow river valleys. The surface of this tableland rises from about 1000 feet in height in the north to upwards of 3000 feet in the south, and as increasing height thus takes away the advantage of a more favourable latitude, it presents everywhere a desolate aspect, almost the only vegetation being heaths, mosses, and lichens. The lowlands of the peninsula are chiefly in the east and south, so that Norway has by far the largest proportion of tableland; its cultivable lowlands, indeed, are confined to a few valleys in the west, with a rather larger area round Christiania Fjord. Hence the total area under crops and grass in Norway, notwithstanding that it has a more favourable climate than Sweden (8), is only 4 per cent. of the surface, as against 12 per cent. or more in Sweden.

242. The rivers of the peninsula are, for the most part, too much obstructed by rapids to be of any great use for navigation, but some of their valleys are long enough and direct enough greatly to facilitate communication between the more populous districts on different sides of the plateau. A railway has been laid from Trondhjem, nearly due southwards, to Oslo, by the valley of the Glommen and the side of Lake Mjösen, which lies to the west of an easterly deviation of the Glommen. Another railway has been laid from Trondhjem eastwards across the tableland, from the eastern base of which it descends south-eastwards to Stockholm. Bergen is connected by rail across the plateau with Oslo. For Swedish train-ferries, see par. 649.

243. Though the rivers of the Scandinavian peninsula are of little service to navigation, the lakes of the lowland region of southern Sweden are of high importance in this respect. Lakes Vener and Vetter, and other smaller lakes, together with the navigable portion of the Göta River, are all connected by a ship-canal 9 feet in depth, and water-communication is thus established between the opposite coasts of southern Sweden. The rivers are important sources of water-power.

244. Products and Commerce.—In both kingdoms timber and

timber products, such as doors and window-frames, wood-pulp and paper made from wood-pulp, and matches, are of great commercial importance, the last mentioned especially in Sweden. In Norway the principal other exports are derived from the sea—cod, chiefly caught round the Lofoten Isles, and exported in the dried state; herrings, mainly from Bergen, the centre of the herring-fisheries; train-oil and whale-bone, products of the whale-fisheries. Norway is to a greater extent than Sweden dependent on foreign supplies of grain, and Sweden, while importing large quantities of rye and rye meal, has oats and barley to spare for export. Sweden, moreover, has long been renowned for its mineral wealth, exporting large quantities of excellent iron and iron ore (132), whereas the minerals of Norway (silver and copper) are not of great aggregate value. In both countries there is a deficiency of coal, though this fuel is found in Sweden in the part of Scania (Schoonen) adjoining the north end of the Sound. The chief mineral region of Sweden, however, is in the east of the country, on both sides of the Dal River. Most important of all are the iron-mines of Dannemora, which have made Sweden famous for its iron for hundreds of years. Far in the north of Sweden there is another deposit of rich iron ore in Mount Gellivara. This was first connected by a railway (the most northerly in the world) with Luleå on the Gulf of Bothnia, and the railway has since been continued past other deposits of the ore to Narvik on the Ofoten Fjord in Norway, which is free from ice all the year round (8). In the southern mining region Sweden also produces copper, at Falun, west of Gävle, and silver and lead at Sala, west of Upsala.

245. Chief Towns, Sweden.—The chief industrial towns are Stockholm, the capital, Gothenburg (Swedish, *Göteborg*), and Norrköping. The chief seaports, Gothenburg, the port most directly accessible from Great Britain and France, as well as from Hamburg and Bremen; Malmö, on the Sound; Halmstad, on the Kattegat. On the Baltic and its arms the chief seaports besides Stockholm are Gävle, Oxelösund (with large export of iron ore), Norrköping, Christianstad, Söderhamn, Sundsvall,

Stockholm . . .	500,000	Malmö . . .	130,000
Gothenburg . . .	245,000		

Hernösand. Only ruins still testify to the former commercial importance of Wisby (Visby), on the island of Gottland.

246. Chief Towns, Norway.—Nearly all the towns of any importance are seaports. The chief are Oslo (Christiania), the capital, and Bergen; among the others are Drammen, Tönsberg, Christiansand, Stavanger, Christiansund, Trondheim, and in the far north Tromsö and Hammerfest. The shipping table in the appendix indicates the importance of the shipping of Norway, which owns many wooden vessels. This seems only natural, when we consider the abundance of timber for building material and cargo, the large number of good and constantly open harbours inviting to a seafaring life, and the scantiness of the means of subsistence on the land.

SPITSBERGEN.

247. This group of islands, somewhat more than 30,000 square miles in extent, formerly a no-man's land, was placed in December 1919, by the Council of the League of Nations, under the sovereignty of Norway, from which it is distant about 400 miles. It has lately attracted attention on account of its extensive deposits of coal, including both steam coal (some of it stated to be equal to the best Welsh) and house coal; bituminous shales, magnetic and other iron ores, copper, lead, and coloured marbles. So far only the coal has been worked—by owners of different nationality, British, Norwegian, Swedish, Russian, and Dutch.¹

DENMARK.

248. Area (excluding the Faroe Islands), almost one-third that of England.

The islands belonging to this kingdom, namely, Seeland, Fyen or Funen, Laaland, Falster, &c., between the Kattegat and the Baltic, and the island of Bornholm, farther east in the Baltic, are for the most part fertile and well peopled. The eastern half of the peninsula of Jutland likewise contains much fertile land and numerous good seaports, but the western half

Oslo 250,000	|	Bergen 100,000
------------------------	--	--------------------------

¹ The total export of coal increased from 15,000 tons in 1909 to 196,000 in 1930.

rather less than twice as large as that of the British Isles, but a population only about three-fifths as great as that of these islands. This population is chiefly settled round the circumference of the peninsula, so that there remains a large area in the interior with an average density about equal to that of the least densely peopled counties of Scotland.

253. Surface and Communications.—This low density of population is partly explained by the character of the surface, which is very mountainous and unfavourable to internal communications. The **Pyrenees**, which separate the peninsula from France, are now crossed by three railways, in addition to those which traverse the coastal plain east and west of the range (142). They are continued westwards by the Cantabrian and Asturian Mountains, which form the northern boundary of a tableland occupying the greater part of the peninsula with an average height of about 2700 feet in its northern half (Leon and Old Castile), and about 2600 feet in its southern half. This tableland is bordered everywhere, except in the west, by mountains and steep slopes presenting obstacles to railway construction, while the rarity of the population, and in many parts the absence of natural resources, hold out little prospect of remunerative returns on works necessary to overcome these obstacles. The intervals between the railways which ascend to the surface of the tableland vary from 60 to 150 miles in a direct line, the widest intervals being on the east side. The list of seaports in paragraph 262 shows how few of these have a direct connection with the interior. The series of mountain ranges which cross the tableland from west to east also present no little hindrance to communication, but the Sierra de Guadarrama is now crossed by one railway running north-east from Madrid to Saragossa, and another running north-west and branching to Avila and Segovia.

254. The rivers of the peninsula, though of considerable length (three of them from two to three times as long as the Thames from its source to the Nore), add little to the means of communication. They are for the most part too much obstructed by shallows and rapids to be navigable for any great distance, and as their beds mostly lie in deep valleys far below the level of the tableland, they cannot advantageously be connected by canals. The **Minho** is navigable only for a short distance from

its mouth. The **Douro** is navigable to the Portuguese frontier, but only by small craft ; and a bar at its mouth, crossed only by a narrow, shallow, shifting, and dangerous channel, generally prevents vessels of more than 800 tons (registered) from ascending even to Oporto. The navigation of the **Tagus** ends within the Portuguese frontier, and that of the **Guadiana** only a few miles above the point where it begins to form the frontier between the two countries of the peninsula. The **Guadalquivir** is the most important of all the rivers of the peninsula as regards navigation. The volume of its water is tolerably constant, being maintained in winter by rain, in summer by the melting of the snows of the Sierra Nevada, the lofty range that borders its basin on the south. It can be ascended as high as Seville by sea-going vessels, and boats go up to Cordoba. The only navigable river on the Mediterranean side is the **Ebro**, which allows small craft to ascend as high as Logroño, and sea-going vessels to Tortosa. But the lower part of the river can be used by sea-going vessels only during high-water, and a small canal has therefore been cut from Amposta (above the deltaic deposits of the river) to allow of such vessels coming and going at any time.

255. Climate.—The climate, as well as the physical features, is somewhat unfavourable to density of population. The total annual rainfall in the greater part of the peninsula is less than twenty inches (98, 267), a higher rainfall being for the most part confined to the north and west coasts. Such rain as does fall is mostly winter rain, or autumn and winter rain, and the height of summer is a period of extreme drought, especially in the southern half of the peninsula (9). The temperature, on the other hand, is high.

256. One advantage the climate of the Iberian Peninsula has. The prolonged period of high temperature allows of valuable crops being grown in quick succession wherever water can be obtained for irrigation (10). In some of the plains and valleys at the base of the tableland water has been used for this purpose in the most admirable manner, in some cases since the time of the Romans, in others since that of the Moors. The water of the **Ebro** is being increasingly turned to account in this way, and irrigation is now the chief use of the long canals that follow its general course in the west of Aragon. The **huertas** (gardens)

of **Valencia** and **Murcia**, the former nourished by the waters of the Jucar and Turia or Guadalaviar, the latter by those of the Segura; the huerta of **Elche**, in which every drop of the summer waters of the Vinalapo is used up in supplying a grove of date-palms planted by the Moors; and the **vega** of **Granada**, fed by the Jenil, a tributary of the Guadalquivir, are all renowned throughout Europe. At Lorca, in the south of Murcia, "the water is in the hands of a large number of proprietors who may or may not be holders of land, and it is sold by public auction every morning during the irrigation season. . . . Each peasant buys the amount he requires for the day, and pays for it in advance, and the proceeds are divided amongst the various proprietors of the water. The average value of a cubic foot of water per second per annum, in this place, is £2300." The total area of irrigated ground in Spain is upwards of 4400 square miles, more than twice that of the county of Norfolk. Hydroelectric supplies are developed behind Barcelona, and schemes are contemplated on several rivers.

257. Agricultural and Forest Products.—The irrigated ground is used for the cultivation of vegetables, **southern fruits** of all kinds, mulberries, rice, and in some places for maize. **Oranges**, the principal sub-tropical fruit of Spain and Portugal, are confined to land at no great distance from the coast. Under the protection of favourable fiscal laws, the cultivation even of **sugar-cane** has been attended with no little success (though not unmixed success) in the provinces of Granada, Malaga, and Almeria. The vine thrives without irrigation (40). Wine is most abundantly produced in the north-eastern provinces, but the only wine for which Spain has a high reputation (sherry) is made in the south, in the neighbourhood of Jerez de la Frontera. The chief Portuguese wines (port, &c.) come from the valley of the Douro. The more fertile parts of the Spanish tableland produce **excellent wheat**, but no longer enough to meet the home demand. Among the crops more specially characteristic of Spanish agriculture are **chick-peas**, which enter into the daily food of the people of all classes, and are exported in considerable quantity to Cuba, **onions**, and **garlic**. **Spanish wool**, famous down to the middle of the eighteenth century for its unequalled quality, no longer ranks so high in quality, and the

Spanish export of this commodity is even surpassed in amount by the import. Of the forest products of the peninsula the most valuable is cork, which is chiefly obtained from the mountains in the north-east of Catalonia, those in the west of Andalusia, and those in the east of the Portuguese province of Alemtejo ("along the Tagus"). The olive abounds both wild and cultivated in the southern half of the peninsula, but the oil is poorly prepared.

258. Minerals.—The mineral wealth of Spain has been renowned for ages, though even yet it is far from being fully developed. **Iron ore**, excellent for steel-making (75), is mined in immense quantity in the Basque provinces near Bilbao, and is also raised not far from Corunna in the north-west of Spain, and in increasing quantity in the south of Spain, near Almeria, Seville, Malaga, and Marbella, this last being a small seaport about midway between Gibraltar and Malaga, and also in Murcia near Cartagena. **Lead** is obtained at Linares in the north of Andalusia, and in other places. The chief **copper-mines** (78) are those of Rio Tinto and Tharsis, in the west of Andalusia. The ore is a kind of iron pyrites containing sulphur and iron as well as copper. It is largely exported (78). **Silver** is found not only associated with lead at Linares, in the east of Andalusia, but also in other forms in several other places. **Almaden**, in the south-west of New Castile, has the principal **quicksilver** (cinnabar) mines in the world, except those of the United States (79). **Coal** exists in large quantity, but unfortunately not in many cases in convenient situations, and the production is as yet only small. The principal mining region is in Asturias, and communicates by rail with the port of Gijon. **Bay-salt** is largely produced on the southern coasts both of Spain and Portugal, and rock-salt is also abundant. **Phosphorite**, a valuable manure, is found in large quantity in Estremadura, and is exported to Portugal and elsewhere.

259. Manufactures.—Cotton and other textile industries are carried on principally in Catalonia and in the Basque provinces. In the latter district the water-power of the Cantabrian mountains is employed, as well as coal, in driving machinery. **Iron industries** are rising up rapidly in the regions where coal and iron ore most abound. **Leather manufactures** (no longer so renowned as in

former times) are carried on in many places, esparto-plaiting is pursued in the provinces which produce this grass (in the south-east), silk-spinning and weaving to a small extent in Valencia and Murcia, where the silkworm is principally reared.

260. Foreign Commerce.—Spain.—Wine long held the leading place among Spanish exports, but that place now belongs to **iron ore**. **Lead, copper**, and quicksilver are also largely exported, the greater part of the copper in the partly refined state known as regulus. Among the other leading exports are cotton manufactures, raisins and grapes, oranges and other southern fruits, olive oil, boots and shoes, cork, and paper. The principal imports are raw cotton, machinery, coal and coke, chemicals, timber, and building materials. Britain and France take the lead both in the import and export trade with Spain. The United States and Germany rank next among those supplying the imports. The former Spanish dependencies of Cuba, Porto Rico, and the Philippines collectively rank third among the countries receiving the exports.

261. Portugal.—The trade of this country is in many respects similar to that of Spain; but among the exports wine accounts for over one-third of the total value, figs are the most important of the southern fruits, cork is of more importance than in Spain (absolutely as well as relatively), and copper ore is the only metallic commodity of any consequence. The United Kingdom holds the first place both in the import and export trade of Portugal, supplying more than a fourth of the total value of the imports. Brazil (534) takes about 20 per cent. of the Portuguese exports, ranking next in this respect after Great Britain.

262. Chief Industrial and Commercial Towns.—A. Spain.—**Capital**, Madrid, in New Castile, in the middle of the country.

Other inland centres of trade.—Valladolid, on the Pisuerga, a few miles above its confluence with the Douro, in Old Castile. Toledo, on the Tagus, in New Castile, still noted for the sword-blades which in former times made the name of the city almost a synonym for a sword. Saragossa (Span. *Zaragoza*), on the Ebro, in Aragon. Cordoba, on the Guadalquivir, a decayed town, long ago celebrated for its leather manufacture, so that

Madrid	.	.	.	835,000	|	Saragossa	.	.	.	160,000
Valladolid	.	.	.	80,000	|	Cordoba	.	.	.	85,000

it gave name to a kind of leather—cordovan or cordwain. Granada, on the Jenil (256).

Seaports, named in order beginning at the north-east. Barcelona, for centuries the chief seaport and manufacturing town in Spain; Tarragona, the chief seaport for the valley of the Ebro in Roman times, Valencia (roadstead), Alicante, Cartagena, Almeria (place of export of grapes), Malaga, Marbella, Tarifa, Cadiz, Seville, on the Guadalquivir, which is dredged for ocean shipping up to this town; Palos, the place of departure of Columbus on the voyage on which he discovered the New World; Huelva, the place of export of copper and copper ore from the Andalusian mines (258); Vigo, Pontevedra, Corunna (*Span. Coruña*), in Galicia; Gijon, Santander, Bilbao, San Sebastian, on the north coast; Palma on Majorca; Mahon on Minorca. All the ports on the north coast are obstructed by bars due to the accumulation of sand carried along by a current which here creeps eastwards. Below Bilbao, the chief place of export of iron ore on the mainland of Europe, the bar has been deepened at great expense.

B. Portugal.—Lisbon, on the Tagus, the capital of the country and chief seaport; Oporto, on the Douro; Setubal, south of Lisbon, the St. Ives of British sailors, chief place of export of bay-salt. A new harbour for Oporto, accessible to vessels of 5000 tons, has been constructed north of the mouth of the Douro, at Leixoes.

263. Gibraltar, a fortress on a commanding rock at the east of the strait of that name, has been in the hands of the British since 1704. It is of importance as dominating the entrance to the Mediterranean. The Spaniards complain of the smuggling alleged to be carried on across the British frontier. It is an important coaling station, and great works are now being carried out with a view to the development of this trade.

Granada . . .	110,000	Seville . . .	220,000
Barcelona . . .	785,000	Santander . . .	85,000
Valencia . . .	275,000	Bilbao . . .	155,000
Alicante . . .	70,000	Palma . . .	80,000
Cartagena . . .	100,000	Lisbon . . .	530,000
Malaga . . .	190,000	Oporto . . .	215,000
Cadiz . . .	80,000		

ITALY.

264. Area and Population.—The area of Italy is about the same as that of the United Kingdom, the population less than one-sixth smaller.

265. Surface and Communications.—Enclosed on the north and north-west by the Alps, and washed almost everywhere else by the sea, the country has well-defined natural boundaries. The hindrance to intercourse presented by the Alps and the nature of the communications now established across and through this barrier have already been considered (142, 197). Hitherto no railway has been constructed across the Stelvio Pass at the head of the valley of the Adda, the route followed by the shortest carriage-road between Vienna and Milan. Many passes across the Apennines, which are continuous with the Alps in the north-west, and stretch through the entire peninsula, have facilitated the construction of railways. Between the Alps and Apennines there lies a great plain in which the communications are abundant and easy.

266. The navigable rivers of Italy are nearly all confined to this great northern plain. The Po is navigable for boats to Turin, for steamers to Valenza, seven miles below the confluence of the Sesia, but its value as a waterway is greatly diminished by the marshy character of its banks, which hinders the growth of towns. The Ticino is navigable from its issue from Lake Maggiore, the Adda from its issue from Lake Como, the Adige from a little below Bozen, the Bacchiglione from Vicenza, the Brenta from Padua. In the peninsular portion of the country the chief navigable rivers are the Arno and the Tiber, the Arno being navigable by boats to Florence, the Tiber by steamers to Rome, and by smaller boats 60 miles higher up (see 273).

267. Climate.—In comparing Italy under this head with Spain and Portugal it is important to observe that Italy lies farther north than the Iberian Peninsula, that the Italian peninsula is narrower, and that the surface is more irregularly mountainous. The portion of Italy generally characterised by extreme summer drought (south of about 40° N.) is smaller than in the Iberian Peninsula. Whereas in Spain the edges of the tableland serve to cut off rain to a large extent from the interior

(9), the mountains of Italy promote the rainfall, especially since they descend to the sea on both sides. Even the plain on the north of the Apennines is not deprived of rain through the intervention of these mountains, since the rain-bearing winds are forced to ascend still higher by the loftier ranges of the Alps. The glaciers of these mountains likewise help to maintain the volume of the innumerable streams which descend from them, and thus increase the supply of water for irrigation, which has been carried out on a more extensive scale in Italy than anywhere else in Europe. The irrigated area in the Po basin is about equal in size to the counties of Lincoln and Norfolk combined.

268. Agriculture.—Altogether, the climate and soil of Italy are sufficiently good to allow of the existence of a large population directly dependent upon agriculture. The area occupied by corn-crops is about twice as great as in the United Kingdom, over and above the area under vineyards, olive-yards, fruit-trees, flax for seed, sugar-beet, hemp, &c. The principal corn-crop is **wheat**. It covers several times as great an area as in the United Kingdom, but the only Italian wheat that is noted for its quality is that of Apulia, in the south-east, where there is grown a hard wheat well adapted for making **maccaroni**. **Maize**, the second Italian corn-crop in extent of acreage, furnishes the chief food of the people throughout a large part of the country. **Raw Silk** (46) is produced chiefly in the Po basin, and **rice** is the most valuable crop of the irrigated fields of that basin. The production of **wine** (40) is extending most rapidly in the southern parts of the country, above all, Sicily (274 B). Most Italian wines are ill-prepared, so that they deteriorate instead of improving with age. **Olives** (62) are grown in many parts of the country; **figs** and **oranges** (39) mainly in the south, oranges most largely in Sicily. The grass and forage crops of Italy are of special importance in the irrigated plains. The meadows are regularly mown four times a year, and in some peculiarly favoured districts as many as nine crops have been known to be reaped in a single year from the same field. The richness of these meadows leads to a large trade, both export and import. Cattle imported from Switzerland and the Tirol are fattened for export, and reared for **cheese-making** (Parmesan, Gorgonzola, Stracchino). The rearing of **poultry** is likewise characteristic of the agriculture of northern

Italy, on which account there is a large export of eggs and poultry. Italian eggs reach even England. Apulia, besides being noted for its wheat, is noted for its **wool**. The sheep of this province are migratory, like those of the Spanish tableland, wide tracks being reserved for their migrations.

269. Minerals.—The Sicilian sulphur (79), produced chiefly in the neighbourhood of Caltanissetta, Girgenti, and Catania, is the most important mineral product in the kingdom. **Iron ore** of excellent quality is obtained in the island of Elba, and is largely exported to the United Kingdom. **Lead and zinc** are important products of Sardinia (the south-west, round Iglesias). Tuscany produces among the Apuan Hills in the north the celebrated **statuary marble** of Carrara, and in a volcanic district in the south large quantities of **boracic acid** escape from the ground in the form of vapour, and the acid is concentrated in water and then solidified. Mineral fuel exists chiefly in the form of petroleum and lignite (74), and even these are far from abundant.

270. Of Italian manufacturing industries, the **reeling and throwing of silk** (46) is the most important commercially, but the weaving of silk by power-looms at Como and elsewhere is developing with remarkable rapidity. The woollen industry is one of old standing, and is also growing, while that of cotton is expanding even more rapidly. The **iron industry** has been specially encouraged in recent years by the Italian government with the view of making itself independent of foreign countries. Large works have been established at Terni, where advantage is taken of the enormous water power furnished by the falls on the Nera, a left-bank tributary of the Tiber, and where there is the further advantage of a supply of lignite at Spoleto, a few miles distant. The Elba ores have been smelted for some time at various places on the mainland opposite, and are now smelted also on the island itself.

271. The characteristic manufacturing industries of Italy, however, are mainly those of an artistic or semi-artistic nature. The **glass-works** and the lace industry of **Murano**, an island town to the north of Venice, have long been noted, though these industries have both declined. Florence produces fine **earthenware and mosaics**; Naples, Florence, and other towns are noted for their works in **coral** (69) and **shell** (cameos), and many Italian

towns for their sculptures in marble and alabaster and their artistic woodwork. Tuscany is well known for its straw-plaiting. Leather industries are growing.

272. Foreign Commerce.—In the special commerce of Italy (under which head are included all articles that have paid customs duty), raw silk and silk manufactures make up more than 20 per cent. of the total value of the exports. Among the other leading exports are animals and their products (eggs, cheese, &c.), cottons, fruit, wine, olive-oil, hemp, and flax. Among the imports, grain, metals and other minerals, raw and manufactured silk, raw cotton, and animals and their products are the chief. The trade is chiefly with the United Kingdom, Germany,¹ the United States, and the countries on the Italian frontier, the United Kingdom coming first in supplying the imports, Germany and Switzerland in receiving the exports. It is worthy of note that a very large proportion of Italian export commodities are sent abroad by land—through the Alpine tunnels (273, 274).

273. Chief Industrial and Commercial Towns.

Capital.—Rome, on the Tiber, a city now rapidly growing in population. Its importance is mainly due to its being the capital, and that again is to be ascribed to a predilection arising from historical associations.²

Other inland centres of trade.—Milan (Ital. *Milano*), in the middle of the fertile plain of Lombardy, the great seat of the Italian silk-trade, an important railway centre, the first important town on the railway from Switzerland through the St. Gothard tunnel (197), and the place of convergence of the roads following the shores of Lakes Maggiore and Como across the Simplon, St. Gothard, Bernardino, Splügen, and Maloja passes; Como, Bergamo, Brescia, towns at the base of the Alps, north

Rome (with suburbs)	1,000,000	Brescia	120,000
Milan	990,000		

¹ In the period 1866–70 Germany's share in the trade with Italy was less than 1 per cent. both in imports and exports. In 1930 Germany supplied about 15 per cent. of the value of Italian imports, and received about 14 per cent. of Italian exports.

² Various plans have been formed for making Rome a seaport by canal or the canalisation of the Tiber.

and north-east of Milan ; Turin (Ital. *Torino*), in Piedmont, at the mouth of the valley of the Dora Riparia, the valley traversed by the railway through the Mont Cenis tunnel (142) ; Florence (Ital. *Firenze*), the chief town of Tuscany, at the head of the most considerable and fertile plain of that province, and so situated that all the traffic between southern Italy west of the Apennines and northern Italy from Milan eastwards must pass through it ; Bologna, the chief town in Emilia, at the point of intersection of the routes east and west of the Apennines in southern Italy, and from Venice and Milan in northern Italy ; Verona, a fortress on the Adige (201) in Venetia.

274. Seaports.—A. On the mainland, mentioned in order, beginning in the north-east. (1) On the Adriatic :—Venice (Ital. *Venezia*), situated on numerous islets in a lagoon guarded by low sand ridges and entered by two channels, the Lido and Malamocco ; the chief port for the eastern part of the northern plain, and for the traffic across the Brenner railway (201) ; Trieste, at the head of the Adriatic Sea, an outlet for Central Europe ; Pola, on the west coast of Istria ; Chioggia ; Ancona ; Bari ; Brindisi, where passengers and mails are taken up and landed on the land-route to and from the Isthmus of Suez and the East. (2) On the west coast :—Reggio, on the Strait of Messina ; Amalfi ; Naples (Ital. *Napoli*), on a small but very fertile plain, the most populous for its extent in all Europe, except where the population depends on manufacturing industry ; Civitavecchia, the present port of Rome ; Leghorn (Ital. *Livorno*), the port of Florence, a modern port taking the place of the once celebrated port of Pisa, whose harbour is now silted up ; Spezia, a naval station ; Genoa (Ital. *Genova*), the leading Italian seaport as regards the value of its imports, a port that has greatly benefited by the construction of the Mont Cenis and St. Gothard tunnels, and which for that and other reasons is rapidly rising in importance ; Savona. **B. In Sicily :** Palermo, the chief Sicilian port, exporting fruit, sumach,

Turin	595,000	Bari	170,000
Florence	315,000	Reggio (Emil.)	90,000
Bologna	245,000	Naples	840,000
Verona	155,000	Leghorn	125,000
Venice	255,000	Spezia	105,000
Trieste	250,000	Genoa	610,000
Ancona	85,000	Palermo	400,000

&c. ; Messina ; Catania in the east, Girgenti and Licata in the south, all exporting sulphur ; Marsala in the west, exporting a well-known wine which takes its name from the town. **C. In Sardinia :** Cagliari, in the south.

275. By the treaty of Rapallo, which was ratified by the Italian government in December 1920, Fiume, at the head of the Gulf of Quarnero east of Istria, was accorded a position similar to that of Danzig, but in 1924 it was handed over to Italy. Like Trieste, it must depend for its future prosperity on the maintenance of its relations with its former hinterland, now divided among the kingdoms of Yugoslavia, Hungary, and Roumania.

MALTA.

276.—This island, south of Sicily, has, with the adjacent island of Gozo, formed a British possession since 1814. Valetta, on Malta, is important as a fortress, *entrepôt*, and coaling station. The islands are densely peopled, the inhabitants speaking a debased Arabic. Many of the upper classes speak Italian, but the use of English is rapidly spreading. Responsible self-government in local affairs was granted in 1921. Early potatoes are exported to England.

THE BALKAN PENINSULA.

277. **Extent and Divisions.**—Under this name we include the greater part of the region lying to the south of the Danube and Save. Together with the adjacent islands belonging to Greece and to European Turkey, the total area is about one-fourth larger than that of the United Kingdom. Comprised in this area are **European Turkey**, the kingdoms of **Greece and Bulgaria**, and **Albania** (for a short time under mandate ¹ of the League of Nations

Messina	.	.	.	180,000	Marsala	.	.	.	30,000
Catania	.	.	.	225,000	Cagliari	.	.	.	100,000

¹ The power granted to certain nations to advise, direct, and preserve peace and order in disturbed lands until the local government is sufficiently strong to assume control.

to Italy). For Yugoslavia see pars. 217-220, and for the Dobruja par. 225. The population, except near the chief towns and on some of the islands, is scanty. Great changes were made among these states at the end of the war of 1914-18, when European Turkey was reduced to the immediate hinterland of Constantinople, and the area of Greece was considerably increased.

278. Surface and Communications.—The surface, including that of the islands, is highly mountainous, the most considerable extent of lowlands being those which border the Danube in the north of Bulgaria. The Save and the Danube form an important line of communication on the north (208). The other rivers of the peninsula are of little importance for navigation, and the irregularity of the surface places great obstacles in the way of inland communication by roads and railways. Since August 1888, however, two important railways have been opened connecting the Danube at Belgrade with Constantinople and the Ægean Sea (207). A carriage-road made by the Russians has since 1879 crossed the Balkans at the Shipka Pass (4000 feet), but the descent from this pass on the southern side is too abrupt for a railway, even though the route on which it occurs is in other respects highly advantageous.

279. Climate.—Notwithstanding the peninsular character of this region, and its southerly latitude, the climate, except that of the islands and the small peninsulas of the south, is, in accordance with the easterly position, one of great extremes (8). In summer the temperature is as warm as in Italy, but in winter by far the greater part of the peninsula has more than a month of mean daily temperatures below the freezing-point. The districts in which such temperatures prevail longest are naturally those northern plains and high valleys which are more or less directly exposed to the cold winds from Russia. Even at the port of Salonika the mean minimum temperature is as low as 22° F.

1. EUROPEAN TURKEY.

280. At the time of the Congress of Vienna in 1815, European Turkey embraced the whole of the Balkan Peninsula except the Dalmatian seaboard and the small principality of Montenegro, and included also the pre-war Roumania. Successive losses of

territory have reduced it to a small area to the north and north-east of the Sea of Marmora and the Dardanelles. Eastern Thrace and the town of Adrianople, at the confluence of the Maritsa and the Tunja, are once again in Turkish hands. Turkey retains the city of Istanbul (Constantinople), the site of which is of peculiar historical and geographical interest. As the seat of an empire it had enormous commercial advantages as the crossing place of the sea-route between the Black Sea and the Mediterranean, and the land routes through western Asia and the territories north of the Mediterranean. Its present commercial importance lies largely in its admirable natural harbour, known as the Golden Horn, being an *entrepôt* for Asiatic produce; its commerce is likely to increase with the establishment of good government in and the development of the resources of Asia Minor, if these things can be brought about.

2. BULGARIA.

281. About four-fifths of the population are Bulgarian in speech, but of the remaining fifth a large proportion are Greeks, between whom and the Bulgarians there is bitter hostility. The Greeks are found mainly in the towns. Several towns on the Black Sea are entirely Greek, and there are other considerable Greek groups in the Maritsa plain and on the lower Tunja.

282. **Surface and Products.**—The northern or Danubian tracts of the kingdom are mainly composed of irregular tablelands cut by deep and narrow valleys. The surface has a somewhat arid appearance, having no dense covering of trees or rich pastures, except in the depressions. The Balkans, though containing fine forests of beeches and oaks, are full of clearings and rich in valleys surrounded by fields of barley, rye, buckwheat, and potatoes, as well as fine meadows. To the south again, in the upper valley of the Tunja, are extensive plains covered with wheat and maize, varied with vineyards, tobacco and sugar-beet plantations, orchards of plums and peaches. Here also are the famous rose-gardens of Kazanlik, which produce the costly perfume known as attar (or otto) of roses. Bulgaria is essentially a land of small cultivators and small proprietors. Coal of good quality is

Constantinople	.	700,000	|	Adrianople	.	.	.	35,000
----------------	---	---------	--	------------	---	---	---	--------

mined at Pernik, south-west of Sofia, with which it is connected by rail. Promising beds of oil shale exist at Brezna, west by north of Sofia.

283. Commerce.—Of the exports grains (wheat, maize, rye, and barley) make up over 50 per cent. of the total value ; others include eggs, attar of roses, sheep, hides, and skins. Manufactured goods are imported. Trade is carried on largely with Germany and Turkey.

284. Towns.—The chief towns are Sofia, the capital, in an isolated basin in the west ; Philippopolis, on the Maritsa ; Trnovo, north of the Balkans, the capital of the old kingdom of Bulgaria, and the Black Sea ports of Burgas and Varna.

3. GREECE.

285. Area and Population.—When first made a kingdom in 1830 Greece had an area of less than 25,000 square miles, but successive enlargements, principally in 1913 and 1920, have extended its territory to nearly double that. Recent extensions of territory have added a larger proportion of aliens in language and religion than of Greeks to the republic, at least on the mainland, the added area being mainly occupied by Macedonian Slavs and Turks. From Salonika southwards, however, the population is mainly Greek. Crete, and the islands of the Ægean Sea, all of which, except Rhodes, now belong to Greece, are all mainly Greek in speech.

286. Surface.—Most of the older Greece is mountainous, the most extensive plains being in Thessaly. A ship canal, opened in 1893, has been cut through the isthmus of Corinth, but its narrowness, less than 100 feet at the surface, and the strength of the current which sometimes flows through it, cause foreign steamers to avoid it. Other hindrances to navigation have been removed by the making of a navigable channel 16½ feet deep between the island of Levkas and the mainland (west side), and the widening of the Evripos channel at Chalkis on the opposite coast to 70 feet.

287. Climate and Products.—The climate of the whole country is typically Mediterranean (9). Cereals are negligently cultivated

Sofia 215,000

even in the areas best adapted for them, Thessaly and Macedonia. About half the land is always in fallow. The extension of the cultivation of currants to a maximum in 1889 was due chiefly to the use of this fruit in wine-making. The large areas of olive groves then devoted to the currant vine are now being reconverted to the slow-growing olive. Cotton gives large yields near Levadeia in Bœotia, and this forms one of the crops in the neighbouring reclaimed area formerly occupied by L. Kopais. There are also successful works of the same nature in the plain of Messenia, and these successes encourage schemes now entertained for the drainage of the Vardar and Struma valleys in Macedonia and Thrace. The honey of Hymettus (to the east of Athens), so celebrated in ancient times, is still an important article of commerce. The chief minerals of the country are the silver-lead and manganiferous iron ore of Laurion (at the south-eastern extremity of Attica), the iron ores of the island of Seriphos, and the chrome ore of Thessaly. Among the minor minerals of the country is the celebrated statuary marble of the Island of Paros.

288. Commerce.—Until 1913 Greece had no rail connection with any other country, so that maritime countries had the advantage. The United Kingdom still led decidedly both among the despatching and receiving countries. The fact that Trieste and Fiume, both at that time Austro-Hungarian ports, are two of the nearest great ports helps to account for the high place then occupied by that empire. The growing prosperity of Germany was reflected in its increasing importance as a consuming country.

289. Towns.—Athens, the capital of the country; its port, The Piræus, is the fourth port in the Mediterranean. Patras, in the Gulf of Corinth, exports currants, and is now a centre of emigration. Volos, the port of Thessaly, has since 1910 been rendered safe by the construction of a breakwater. Salonika is the inevitable port, not merely for the recently added portion of Greece, but also for eastern Yugoslavia. It has an important carpet industry. Other ports are Corfu, on the island of the same name, and Candia, in Crete.

Syros, or Hermoupolis, on the island of Syros, among the

Athens	.	.	.	455,000	|	The Piræus	.	.	135,000
Salonika	.	.	.	235,000	|				

Cyclades, is a free port and a great place of call for vessels trading with the Levant.

4. ALBANIA.

290. The kingdom of Albania (277) is a rugged territory, about one-half larger than Wales, to the north-west of Greece, inhabited by a people quite distinct from the rest of the population of the peninsula, who have nearly always maintained virtual independence, whoever may have been their nominal suzerains. Its coast line includes the bay of San Giovanni di Medua, with a good anchorage in the north, the port of Scutari at the mouth of the Boyana, which is, however, accessible only to small vessels, the ports of Durazzo and Valona, and the good anchorage of Butrinto Bay. Valona, the best natural harbour, is capable of improvement, but it suffers from the natural difficulty of communication with the interior. The capital is Tirana.

ASIA.

291. Asia is the largest of the continents, and that which contains the greatest number of inhabitants, but its population is very unequally distributed. Taken roughly, the distribution of the population answers to that of the rainfall. Almost the only part of the continent with an abundant rainfall is that in the south-east, to the east of the river Indus, in which **monsoon winds and rains** occur (9). Vast areas in the interior are tablelands varying from 2200 to 18,000 feet in height, from which still higher mountains cut off the access of rain (9). The plains in middle latitudes in the west are equally arid. Outside of the monsoon region there is probably not one million square miles, perhaps one-tenth of this section of the continent, in which the total rainfall of the year amounts to as much as 16 inches (98).

COUNTRIES OUTSIDE OF THE MONSOON REGION.

292. **SIBERIA.**—This region, composed mainly of a vast plain in the north and west, and of tablelands and mountainous country in the east and south-east, and extending in all over

an area of nearly 5,000,000 square miles, was acquired by Russia mainly in the seventeenth century, and its colonisation has been going on ever since. Deported criminals and political offenders at one time formed a large element of the population, but free settlers are arriving from Russia in greater numbers. The total Russian population of Siberia amounted in 1920 to about 5,000,000, two-thirds of whom are in Western Siberia, which is, roughly speaking, synonymous with the basin of the Ob. In that basin the settled area is almost entirely to the south of 58° N.

293. Agriculture is the principal occupation of the people, and grain has already risen to the rank of the chief export. The whole of the southern belt as far as 60° N. is described by Russian authorities as being more or less fit for cultivation, though large parts of this tract will first have to be cleared of forests, and other areas are at present marsh-land. In estimating the value of this region, however, the deficiency of rainfall indicated in paragraph 291 must be taken into account; but, on the other hand, it is to be remembered that during half the year, when the temperature is below freezing-point, there is little loss of moisture by evaporation, that the rainfall, though scanty, occurs chiefly in the summer months (the season of growth), and that the high temperature and bright suns of the eastern summers make up for their short duration (8). Since the opening of the Siberian Railway (296) dairy farming is of increasing importance, and large quantities of butter are prepared even as far east as the Minusinsk district, for export from the Baltic, 3000 miles distant. North of this cultivable region the chief products are those of the forests, including furs, and still farther north lie the treeless moss-covered tundras, in which the only article of value in commerce is fossil ivory obtained from the remains of an extinct species of elephant (the mammoth).

294. The mineral wealth of Siberia is likewise very abundant. Siberia produces at least three-fourths of the Russian gold and two-thirds of the Russian silver. The chief goldfields are at the present time in the east. Silver is produced chiefly in the Altai region. The country also contains extensive deposits of iron ore, lead, copper, and graphite, besides coal.

Till recently graphite, found in the mountains to the south of the Yenisei basin, was commercially important, but it is now little worked owing to the competition of more accessible sources of supply (79). One coalfield, containing also iron ore, and partially covered by forests, covers an area of upwards of 16,000 square miles in the upper part of the basin of the Tom. Most coal is produced in the Amur province.

295. The chief obstacle to the commercial development of Siberia is the deficiency of communications. The great navigable rivers, the Lena, Yenisei, and Ob, draining into the Arctic Ocean, and the Amur, draining into the Pacific Ocean (Sea of Okhotsk), afford with their numerous navigable tributaries a large extent of waterways. To complete the line of water communication between Lake Baikal and the Urals, a canal has been made in about lat. 59° N. connecting the basins of the Yenisei and Ob, and the railway to Perm across the Urals now begins at Tyumen, the limit of navigation on one of the western tributaries of the Tobol. But this route is impeded by rapids on the Angara, the outlet of Lake Baikal; it is stopped by ice for five and a half or six months in every year; it is at best a very circuitous route; and, lastly, it carries the principal products of Siberia to a land which abounds in similar products, and in which, accordingly, they have a smaller value than they would have elsewhere. On this account it is especially unfortunate for Siberia that its chief navigable streams open into seas so long closed by ice that it is extremely difficult to establish communication by sea with their mouths. Repeated attempts have been made to utilise the Yenisei for commerce with the west of Europe. Interest in this route was revived in 1911, and since then several successful voyages have been made, the difficulties of navigation being reduced by providing the vessels with wireless apparatus and the establishment of three wireless stations in or near the Kara Sea. This sea is open for only six weeks in August and September, but that time has been found sufficient to allow ships of upwards of 1500 tons dead weight to carry out European manufactured goods to be exchanged for butter, flour, wool, hemp, linseed, hides, and furs.

296. Siberia is now traversed almost from end to end by the Siberian Railway, the first stone of which was laid at

Vladivostok, at the Pacific terminus of the railway, on May 19, 1891, and which was completed in 1904. The railway for most of its length follows approximately the route of the old postal road, along which wheeled vehicles passed in summer, and sleighs with greater rapidity in winter, beginning at Tyumen, and passing through the towns of Omsk, Tomsk, Krasnoyarsk, and Irkutsk. The railway, however, enters Siberia from European Russia far to the south of Tyumen, and passes a considerable distance to the south of Tomsk, to which there is a branch line. East of Lake Baikal the railway passes through Nerchinsk to the Amur valley, from which a line ascends that of the Usuri southwards, and then descends to Vladivostok. The main line, however, now branches off above Nerchinsk, and runs south-east through Manchuria to Harbin, whence lines run south to Port Arthur and the commercial port of Dairen, at the end of the Liautung peninsula, and east to join the line to Vladivostok.

297. The railway has naturally attracted to it a great deal of the trade with Russia in Chinese tea and silks, and also carries large quantities of Siberian furs to Europe. Locally there is also a large trade in grain, principally wheat, animals, meat, hides, tallow, wool, and dead game, but the principal export trade is in butter.¹ The principal articles carried in the opposite direction are agricultural and mining machinery and other manufactures. Passengers are conveyed in luxurious carriages, and Shanghai, Nagasaki, or Yokohama can be reached by this route in eighteen to twenty days.

298. Troitskosavsk (Kiakhtha), on the frontier opposite the Chinese (Mongolian) town of Maimachin, in the Selenga basin, is worthy of note as the seat of a considerable trade with China, which exchanges tea and some minor articles for fur and other Siberian and Russian products. The chief towns of Siberia not on the railway are Tobolsk, at the confluence of the Irtysh and Tobol; Yakutsk, a centre of the fur trade on the bend of the Lena that brings that river nearest to the Sea of Okhotsk;

Tomsk	.	.	.	92,500	|	Irkutsk	.	.	.	100,000
-------	---	---	---	--------	--	---------	---	---	---	---------

¹ The total quantity of Siberian butter exported in 1898 was about 2500 tons, while in 1912-13 the amount received thence by the United Kingdom alone was about 27,000 tons. This trade was largely in the hands of British and Danish merchants.

Yeniseisk, on the Yenisei ; Barnaul, on the Ob ; Semipalatinsk, on the Irtysh.

299. SOVIET CENTRAL ASIA.—To the south of Western Siberia, the territory west and north of the Chinese, Indian, Afghan, and Persian frontiers is under Soviet administration. It includes the Socialist Soviet Republics of Uzbekistan (capital Tashkent), Turkmenistan (Ashgabad), and Tadzhikistan (Stalinabad) in the south, and the autonomous republic of Kazak (Kzyl-Orda) in the north.

300. The western part of Soviet Central Asia consists mainly of plains and low tablelands, mostly desert. Throughout the region, indeed, cultivation keeps for the most part to the neighbourhood of the mountains (9). Where carried on at a distance from the mountains it is only by the favour of rivers which have gathered volume enough in the mountainous region to reach a considerable distance into the plains. Three rivers reach large salt lakes. These are the Ili, which enters Lake Balkhash through a swampy delta, the Sir, or Jaxartes, and the Amu, or Oxus, which flow into the Sea of Aral. The Zerafshan, the Murghab, and the Heri Rud, on the other hand, all dry up in the sands. Cultivation is carried on where possible along the banks of these rivers and their tributaries, and where the nature of the ground admits of it large tracts are irrigated by means of their waters. The area of the Merv oasis, which uses up the water at the end of the Murghab, is about 1700 square miles, that is, less than that of the county of Lancaster ; but the actually cultivated portion of this is scarcely one-third of the whole, say about as large an area as that of the county of Worcester.

301. Besides Merv, the principal oases are Khiva, fed by streams drawn from the Lower Amu ; Bokhara, at the end of the Zerafshan ; Samarkand, higher up on the same river, so that an extension of this oasis involves a diminution of the water-supply for Bokhara ; Tashkent, watered by streams on the right bank of the Sir ; Khojent, and Kokand, on or near the Sir, higher up.

302. The valleys lying among the eastern mountains, the valley of the Ili, that round Lake Issyk Kul (both in

Tashkent	.	.	.	400,000	|	Kokand	.	.	.	70,000
----------	---	---	---	---------	--	--------	---	---	---	--------

Semiryechensk), and the upper valley of the Sir (Ferghana), are not only plentifully watered, but blessed with a **black soil** as rich as that of southern Russia. In these valleys, accordingly, there is the prospect of rapid development.

303. The Sir and Amu serve as means of carriage for the products of the region, but the commercial development of Soviet Central Asia has been greatly promoted by the construction of the **Trans-Caspian railway** from the port of Krasnovodsk, on the Caspian, along the base of the mountains in the north-east of Persia, then north-eastwards through the oases of Tejen, Merv, Charjui (on the Amu), and Bokhara, to Samarkand, and thence by Khojent to Kokand, Margilan, and Andizhan in Ferghana, a distance of 1268 miles from Krasnovodsk. Another line runs from Orenburg, on the Ural River, north of the Aral Sea, to Tashkent. The chief product transported by these railways from Central Asia, including northern Persia and Afghanistan, is **cotton**, which is cultivated throughout the region, but chiefly in Ferghana.

304. CAUCASIA.—The region so called comprises all the territory on both sides of the Caucasus, and is now composed of the three states of Northern Caucasia (N.C.), lying mainly to the north of the middle parts of the Caucasus Mountains, Georgia (Ge.) to the south of the same parts, and Azerbaijan (Az.) in the east, stretching along the Caspian Sea. The richest part of this region is that which occupies the series of valleys between the chain of the Caucasus and the tablelands to the south. It is not only that part which has the climate most favourable to vegetation (a region, accordingly, of forests, vineyards, cornfields, cotton and tobacco plantations, and pastures), but also that which contains the bulk of the enormous **mineral wealth** of the Caucasus. Commercially, the mineral product at present of most importance is **petroleum**. A **coalfield** in the west, containing excellent coal, has now been connected by a branch line of **railway** with the main line which traverses the series of valleys from Baku (Az.) on the Caspian to Poti and Batum (Ge.) on the Black Sea. Iron ore, manganese, and copper are also commercially important. Among agricultural products may be mentioned wool (some of fine quality), which is exported mainly to France (Marseilles). The chief town in

Caucasia is Tiflis (Ge.) on the Kur. It is connected by a road through the gorge of Dariel with Vladikafkas (N.C.) (232). Baku, the centre of the petroleum district, is now beginning to rival Tiflis in population and trade. Novorosiisk (N.C.) is a rapidly growing grain port on the Black Sea.

305. ARMENIA¹ is a new state created since the war, lying to the south of Georgia and west of Azerbaijan. In the north-east it includes L. Gokcha, a fresh-water lake, being drained at least in rainy seasons to the Aras. L. Van, which has no outlet, is now in Asia Minor. It is so highly charged with sulphate and carbonate of soda that its water is undrinkable. Armenia is mainly composed of tablelands above 4000 feet in height, cut off from the Turkish port of Trebizond by two parallel mountain ranges, the frequented road across which leading to north-west Persia crosses the inner and higher of the two at a height of upwards of 7700 feet. The seaward slopes of both these ranges are clothed with forests, but the inner slopes and the plateaux present scenes of stony aridity with only steppe grazing. The upper courses of the two headstreams of the Euphrates mostly flow in deep and narrow gorges, so that the cultivable lands are to be found only in occasional expansions on their banks at such crossing places as Erzinjan and Erzerum, the chief town.

306. The climate is inevitably one of extremes. The warm summers allow of the growth of such Mediterranean products as can endure severe cold, so that the exports include, besides wheat, barley, wool (some of fine quality), and oak-apples, maize, southern fruits, melons, raisins, and wine. The imports are mainly manufactured articles, and exceed the exports in value, no doubt largely in consequence of the earnings of the transit traffic.

307. The majority of the inhabitants are a Christian people, descended from the ancient Hittites with Aryan intermixture, and people of the same race are found in the adjacent parts of Persia and the south-east of Asia Minor, a region often known as Lesser Armenia.

308. The area known as Kurdistan is politically divided

Tiflis	295,000	Baku region	455,000
Vladikafkas	80,000	Novorosiisk	70,000

¹ Georgia, Azerbaijan, and Armenia form the Trans-Caucasian Socialist Federal Soviet Republic of which the capital is Tiflis.

among Turkey, Iraq, and Persia. It extends southwards from western Armenia to the Diyala tributary of the river Tigris, and westwards to the gorge of the Euphrates. In the north is the elevated tract of the Dersim in the angle between the two Euphrates headstreams, where even the swiftest torrents are frozen for three months in the year. The inhabitants are the Kurds, who attempted unsuccessfully to secure national independence after the Great War. They are mainly nomads, who mingle in the adjoining parts of Armenia with the Armenians, with whom they maintain an age-long hostility, due to difference of language and religion, and still more to the difference in the mode of life. There are rich copper mines at Argana Maden near the head of the Tigris and silver-lead mines at Keban Maden just below the confluence of the so-called Western and Eastern Euphrates.

309. ASIA MINOR (capital, Angora), the principal portion of the Turkish republic, is a tableland about 3000 feet in height, skirted by valleys and plains, some of which almost vie in fertility and beauty with the huertas of Spain (256). The surface of the tableland is for the most part arid, and in great part desert. Even the largest rivers of the peninsula are too scantily supplied with water to be of much service as means of communication. The tableland is most closely shut off from the lowlands by the range of Taurus in the south-east, and hence the pass through these mountains known as the Cilician Gates, leading down to the valley of Adana, is a physical feature worthy of special note.

310. On the tableland trade is carried on chiefly by camel caravans (19), but railways are extending. Smyrna, at the head of a fine natural harbour on the west coast, is the point of convergence of railways that ascend three of the most productive valleys in Asia Minor, and one of these now joins a line that traverses a large part of the tableland. This latter line begins at the new port of Haidar Pasha opposite Constantinople, and runs south and then south-east to Konia, the ancient *Iconium*. The continuation of this line forms the Baghdad Railway (643). A branch from this line running eastwards a little to the south of the fortieth parallel of latitude reaches Angora, which gives name to the goat from which mohair (45) is obtained. It is

Smyrna 155,000

proposed to extend this line by Sivas to Diarbekr, through a rich silver, lead, and copper district. A short line in the north-west connects the silk-working town of Brusa with the Sea of Marmora. In the south-east of the peninsula a railway from Mersina to Adana, on the Seihun, was completed in 1886. This railway opens up a valley of remarkable fertility, noted now as in ancient times for its extraordinarily abundant crops of wheat, and proved by trial to be excellently suited for the cultivation of cotton, as well as sesame (62) and other products.

311. The nature of the products of the peninsula and its waters is indicated by the chief exports of Smyrna, the first ten in the order of importance being as follows :—raisins, valonia, cotton, opium, figs, barley (of excellent quality), liquorice, carpets, wool, sponges. A considerable proportion of the products of Asia Minor, including carpets, mohair, &c., reach western Europe by way of Constantinople, being sent thither from Trebizond, Samsun, Sinope, and other ports on the Black Sea, as well as the ports on the Sea of Marmora.

312. SYRIA, PALESTINE, and TRANS-JORDAN are included in the area to the south-east of Asia Minor and west of Iraq, from which the habitable parts are separated by desert. Syria is under mandate to the French, Palestine and Trans-Jordan to the British. The area presents numberless indications of the decline following upon misgovernment. The population is estimated to be less than a tenth of what it once amounted to. The soil, in many places remarkably fertile, is to a large extent impaired by neglect, and terraces for cultivation on the hillsides have been allowed to fall in ruins. The agricultural products are those characteristic of the Mediterranean generally; but the silk of the Lebanon, the tobacco of Latakia (Syria), and the oranges of Jaffa (Palestine) may be specially mentioned.

313. The chief port is Beirut, which has taken the place of the ancient Tyre and Sidon. Like all the other Syrian ports, Beirut has no harbour, but it has a fairly good roadstead, and it now has the advantage of a railway across Mount Lebanon, and through the breach in the Anti-Lebanon made by the Barada, the river of Damascus. It is hence the port of Damascus,

Brusa	.	.	.	60,000	|	Damascus	.	.	.	195,000
Beirut	.	.	.	135,000	|					

which, after being for ages a great centre of the caravan trade north, east, and south across the deserts, has now become a great railway centre. The line from Beirut has a northerly connection to Aleppo and the Baghdad Railway. Southward run two lines, one ultimately going west down the valley of Jezreel to Haifa, the chief port of Palestine, whence a line running south through the coastal plain links up with the Egyptian system; the other through the wheat-growing plain of the Hauran to the Hejaz in Arabia. Alexandretta, or Iskenderun, to the north of Beirut, is the port of Aleppo, which in the days when a large part of the trade of the East was carried on by way of the Persian Gulf and the Euphrates valley, was a commercial centre of the first rank. The trade of Aleppo with Alexandretta is carried on by means of a branch of the Baghdad Railway. A railway connects Jaffa with Jerusalem.

314. CYPRUS, the island in the angle between Syria and Asia Minor, has been under British administration since the Treaty of Berlin in 1878, and was added to the British Empire in 1914. Cultivation is extending, and the export of wine (chiefly for mixing), carob beans, wheat, sesame, and other products is increasing. The vine is principally cultivated round Limasol, on the south coast. Locusts once formed the great plague of the island, but under British direction they have been successfully dealt with. The capital of the island is Levkosia, or Nicosia, in the middle of the great plain which stretches from west to east. Irrigation works have been carried out here. The chief port is Larnaca, on the south coast.

315. Iraq (or Mesopotamia).—This kingdom has been placed by mandate¹ under British control. The country includes the large plain between the rivers Tigris and Euphrates and the area bordering upon these rivers and the Shat-el-Arab, the stream by which the united waters of the Tigris and Euphrates enter the Persian Gulf. This region is dependent upon irrigation, and neglect of the works for the purpose has led to an even more striking decline than in Syria and Asia Minor. At present the extent of cultivated land is believed to be equal to only about two-thirds of the area of Yorkshire; but it is estimated that between the site of the ancient *Babylon* (about 32½° N.) and

Aleppo 180,000

¹ Mandate terminated, Oct., 1932.

34° N. from 4000 to 5000 square miles could be reclaimed for cotton, sugar-cane, cereals, and pulses. Petroleum from Kirkuk between Baghdad and Mosul is taken by pipe lines to Tripoli (Syria) and Haifa. Camel-caravans and river-boats and rafts form the means of local communication. Ocean-going steamers ascend to Basra (Bussorah) on the Shat-el-Arab, river-steamers to Baghdad on the Tigris, and smaller boats to the still important town of Mosul, opposite the site of the ancient *Nineveh*. On the Euphrates navigation is much obstructed by mills and other artificial hindrances, and boats do not ascend beyond 33½° N. Baghdad, which has for more than a thousand years been the chief town in Mesopotamia, owes its importance chiefly to the irrigation works and petroleum wells in its vicinity, but also to its advantages for trade. Besides being the head of steamboat navigation on the Tigris, it is the point of connection of a trade-route leading from Mesopotamia to central Persia. For the Baghdad Railway see par. 643.

316. ARABIA is made up mainly of desert tablelands upwards of 3000 feet in height. The coast is everywhere bordered by a strip of flat country, generally arid and fiercely hot, and the only parts that have even a fair supply of rain are the mountainous tracts in the south-west (Yemen) and the south-east (Oman). Yemen, the Arabia Felix of the ancients, has mountains rising to upwards of 10,000 feet in height, and has an ideal climate for coffee-culture (52). The cultivation of the mountainsides, which are carefully cut out into terraces, is admirable. The oases in the interior are the home of the Arab race in its purity, the typical region of the fleet desert horse, the camel, and the date-palm. Politically, Arabia is divided. The peninsula of Sinai belongs to Egypt, the remainder of the west coast includes the kingdom of the Hejaz in the middle and the imâmate of Yemen farther south. The interior oases of Nejd, capital Riyadh, are subject to the King of Hejaz, who governs also the strip of El Haza, on the Persian Gulf, extending to the bay situated to the south of the Bahrein Islands. The remainder of the east coast forms the sultanate of Oman. **Aden**, on the south coast, near the Strait of Bab-el-Mandeb, has belonged to the British since 1839, and is fortified. It became the Colony of Aden

Bagdad	250,000	|	Basra	165,000
------------------	---------	--	-----------------	---------

on April 1, 1937. Possessing an admirable natural harbour, it has at different periods been a great *entrepôt* in the trade between Asia, Africa, and Europe, and since the opening of the Suez Canal its importance in this respect has greatly increased. The site it occupies is nevertheless so sterile that all provisions and firewood have to be imported, and water is largely obtained by the condensation of the steam of sea-water. In **Yemen** the most important town is Sana, which lies at the height of about 7500 feet in the interior; and the port of Hodeida, in direct communication with this town, is the busiest seaport on the Red Sea. The port of Mokha, farther south, gives name to the coffee of Yemen. In the **Hejaz** the chief town is Mecca, to which, as well as to its port, Jidda, the Mohammedan pilgrimages give a great deal of mercantile importance. The Hejaz Railway (313) was constructed to facilitate these pilgrimages. The capital of **Oman** is Maskat (Muscat). The Bahrein Islands, which are subject to an Arab ruler under British protection, are noted for their pearl-fisheries.

317. IRAN or PERSIA, like Arabia, is largely made up of tablelands over 3500 feet high, and in the east these are in a great measure desert. Mountains in the west and north promote a heavier rainfall (9), which, even where insufficient for cultivation, as it mostly is, at least feeds numerous streams that can be used for **irrigation**, or supplies moisture which can be drawn from the heart of the mountains by tunnelled canals (kanats or karizes). Through the misgovernment of despotic rulers, however, production and commerce are in an extremely backward condition. The means of communication are very imperfect. From the capital, Teheran, situated at the base of the Elburz Mountains, there runs a short railway. Even yet there are only three or four good carriage roads. From Teheran to Tabriz, the chief city in the north-west, whence a railway connects with Tiflis (304), goods have to be carried the greater part of the way by pack-animals, though this is on the route by Erzerum to Trebizond (305).

318. The only navigable river in Persia is the Karun, which belongs to the Mesopotamian plains, its mouth being connected

Mecca	85,000	|	Tabriz	200,000
Teheran	350,000			

by a side-arm with the Shat-el-Arab at Mohammera, a commodious port at which vessels of large draught can approach close to the shore. The Karun is navigable as high as Ahwaz, where a rapid occurs. A mule-caravan road to Isfahan is now open, and this seems likely to divert a good deal of trade from Bushire, on the Persian Gulf. This port has only an open roadstead, is connected by a wretched road with Shiraz, and is 530 miles from Isfahan, as against 277 miles by the Mohammera route. The port of Bandar Abbas (Gombroon) is at the entrance to the Persian Gulf, opposite the island of Ormuz, which was an important seat of trade in spices and other eastern products till the early part of the seventeenth century. The principal Persian seaports on the Caspian are Resht and Balfrush.

319. The chief export products of Persia are pearls, opium (grown in the best quality round Isfahan), silk, carpets, petroleum, gums (including gum tragacanth), and various drugs and dyes; coral, turquoises (from Nishapur), and the famous Persian horses. The chief imports are cottons, sugar, tea, pearls, wheat, and flour.

320. AFGHANISTAN resembles Persia in surface, climate, and products, and is, like it, cultivated where irrigation can be practised, in the neighbourhood of the mountains; barren or nearly barren elsewhere. It includes in the north-east the part of the Pamir containing the chief head-waters of the Amu. This region contains some of the loftiest valleys in the world (in places upwards of 15,000 feet in height), scantily inhabited by a few virtually independent tribes. The richest valleys of Afghanistan are in the north—those of the Kabul River and the Heri Rud. On the former river stands Kabul, the capital, which has been connected with Peshāwar by a carriage-road through the Khaibar Pass since the temporary occupation of the town by the British in 1879. On the Heri Rud stands Herat, the centre of a well-irrigated and fertile valley, about 120 miles in length by about 12 miles in width.

321. The trade with India is carried on principally through the Khaibar and Gomul (or Ghwalári) passes leading into the Punjab, the latter pass forming the route both from Ghazni and Kandahar.

Shiraz	.	.	.	35,000	|	Isfahan	.	.	.	100,000
Balfrush	.	.	.	30,000	|	Peshāwar	.	.	.	105,000

Across the Hindu Kush Mountains west of Kabul traffic is mostly carried on by the Bamian Pass, upwards of 12,000 feet high. The trade by this route has, however, been greatly reduced since Central Asia came under Russian influence. From Afghanistan to Sind there is a growing trade in wool.

322. BALUCHISTAN is mainly made up of barren tablelands inhabited by sparsely scattered tribes. It is now under British control, and a tract in the north-east, forming the districts of Pishin and Sibi, and containing the fortress of Quetta (5500 feet), is part of British India. A railway through the Bolan and Nari passes connecting Quetta with Sind, now reaches Persia.

THE MONSOON COUNTRIES AND THEIR DEPENDENCIES.

323. INDIA.—The area of India, inclusive of Kashmīr, but exclusive of Burma, is equal to about fifteen times that of Great Britain. The population is one of great density, especially on the well-watered plains and lowlands. The greater part of India is under direct British rule, and almost all the remainder is subject to native princes under British control or influence. Portugal and France are the only two other European powers that retain possessions there. The **Portuguese possessions** consist of Goa, a district on the west coast about the size of the English county of Durham ; Damān and Diu, on opposite sides of the north of the Gulf of Cambay. The **French possessions** consist of Pondichéry and Karikal, on the Coromandel (south-east) coast ; Yanaon, on the delta of the Godāvari ; Chander-nagore, above Calcutta ; and Mahé, on the Malabar (south-west) coast.

324. There is no part of the world better marked off by nature as a region by itself than India, exclusive of Burma (347). It is a region, indeed, full of contrasts in physical features and in climate, and one that has never been, strictly speaking, under one rule ; but the features that divide it as a whole from surrounding regions are too clear to be overlooked. On the north it is bounded by the Himalayas, the loftiest mountains in the world ; on the west, as we have already

seen, it is bounded by mountains and deserts ; and on the east and north-east not only is it bounded by mountains, but lofty mountain chains and deep valleys follow one another for hundreds of miles. Elsewhere the boundary is the sea.

325. Surface and Communications.—Within the mountains a vast plain, from about 150 to more than 300 miles in width, sweeps round from the delta of the Ganges and Brahmaputra in the east to that of the Indus in the west. The peninsular portion to the south of these plains is mainly made up of tablelands varying in elevation, for the most part from about 1500 to 2500 feet. On the west this tableland advances close up to the sea, and is bounded by the mountains called the Western Ghâts ; but on the east its boundary is generally at a greater distance from the coast, and is more winding. The name of Eastern Ghâts is sometimes used as a general term for the whole of this boundary, sometimes restricted to its southern portion.

326. In the plains **communication** is naturally easy. The scarcity of stone in the great plains of the north has been an obstacle to the making of good metalled roads, but the rivers of the Ganges basin mostly furnish good waterways, and the flatness of the surface has greatly facilitated the construction of railways. Of these there is now a tolerably dense network in the middle of the Ganges basin, where they have almost superseded water carriage, except in the case of heavy goods. In the delta of the Ganges and Brahmaputra, which furnishes an unsurpassed system of water communications, the network of railways is not so close, and the Brahmaputra still forms the main highway to the north-east. A line of steamers regularly plies up and down it as far as Dibrugarh, about fifty miles below the angle made by this river on entering Assam. The Indus, owing to frequent shiftings of its bed and accumulations of sand, is not so easy to navigate, and since the railway has been laid up its valley the line of steamers that formerly plied on it has ceased to run.

327. In the peninsular portion of India (the Deccan) the nature of the surface has placed special difficulties in the way of communication between the coast and some of the richer plains or depressions of the tableland in the interior. The rivers in times of flood are too impetuous, at other seasons most

of them are too scantily supplied with water, to be navigable except near their mouths, and even where they are navigable higher up their navigation is impeded by rapids occurring where they break through the mountains bordering the plateau. Not only so, but they mostly break through these mountains in gorges too narrow or country too wild to be easily traversed by roads or railways. This is equally true of the Narbadā (Nerbudda) and Tāpti, which flow westwards into the Arabian Sea, and of the Mahānadi, Godāvari, and Kistna or Krishna, which flow eastwards into the Bay of Bengal. At present there are only three places at which the Western Ghāts are crossed by railways; at the pass known as the Thāl Ghāt, by which the railway proceeds north-eastwards from Bombay to Allaha-bad; at the Bhōr Ghāt, by which the railway proceeds south-eastwards from Bombay to Poona and Madras; and between Dhārwar and the Portuguese harbour of Goa. South of the Nilgiri Hills, an important relative depression, little more than 1000 feet in height, between the Western Ghāts and the mountains in the extreme south of the peninsula, affords a passage for the railway between Calicut and Madras.

328. Climate.—The Indian year is divided into **three seasons**—the hot, the rainy, and the cool; but these names are appropriate only in certain parts, particularly in the north-east and along the western coast. The **hot season** is from **March to May** inclusive, the period that embraces the change of the monsoons from a northerly to a southerly direction, but before the “bursting” of the monsoon; that is, before the southerly winds begin to be accompanied by rain. During this period the highest temperature is in the heart of the Deccan. The **rainy season** lasts from **June to October** inclusive, and during this period the western slopes of the Western Ghāts, the hills of Assam, the eastern Himalayas, and even the plains of the Ganges delta, are deluged with rain, and the greater part of the north-east receives a fairly abundant rainfall. The part of the Deccan immediately behind the Western Ghāts, however, has a very moderate and precarious rainfall, and so too have the plains in the north-west. A large part of the Indus valley is almost

Poona . . . 215,000 | Calicut . . . 80,000

rainless. Where the rains are abundant, and the extent of cloud accordingly considerable, the temperature is mitigated, but in the arid region just referred to this is naturally the hottest period of the year. The cool season, or the season of the north-east monsoon, lasts from **November to February** inclusive, and this is the rainy season for the south-eastern plains; but the amount of rain that then falls is only one-third or one-fourth of that which falls on the best-watered plains in the north during the rainy season.

329. The amount of rain that falls varies in India, as everywhere else, from year to year; but it is an important fact that, whereas in a country like England the variations in the rainfall may increase or diminish the abundance of a crop, in a large part of India the variation may be such that in one year there is an ample supply for a good crop, in another a rainfall wholly inadequate to produce any crop at all. It is this area of uncertain rainfall that is liable to be visited by famines, and hence **irrigation** has to be practised not only in those parts of the country in which there is always a deficiency of rain, but also in those in which it is doubtful whether the rain may be sufficient or not. Large parts of southern India are dotted with tanks for the storage of irrigation water. The plain of the middle Ganges between Delhi and Benares is riddled with wells, sunk to a depth at which water is always to be had. But the greatest irrigation works are canals led from rivers. In some cases such canals are merely laid so as to carry off the surplus water of times of flood. These are known as inundation canals, and canals of this kind were much used by the natives before the British occupation. But works of much greater magnitude have since been made under British rule, in the form of canals into which is led nearly the whole body of water belonging to a river for a greater or less distance. The Ganges Canal, exclusive of distributing channels, is 1000 miles in length.¹ These canals serve also for navigation. The Lloyd Barrage at Sukkur on the lower Indus provides water to irrigate in Sind a larger area than is cultivated in Egypt (396).

¹ About 1885 the length of canals under government supervision was above 28,000 miles, and the area irrigated by them about 12,000 square miles; in 1929-30 the irrigated area was about 80,000 square miles (Punjab, 20,000; Sind, 5000).

330. Agricultural Products.—India is essentially an agricultural country. The main food-crops are rice in the best-watered plains (54), millets and pulses, including chick-peas (257), elsewhere. Millets, pulses, and oil-seeds (62), the chief of which are linseed, rape-seed, and sesame, are grown almost everywhere. Other crops are characteristic of certain regions. **Opium** (49) cultivation has its chief seats in the valley of the Ganges round Patna and Benares; and in Central India, in the region corresponding to the old kingdom of Malwa. **Cotton** (47) is mainly grown on the southern tableland, and above all in that series of fertile plains opened up by the railway that ascends the Tāpti valley—that is, the plains of Khāndesh in Bombay, and of northern Berār, both lying on both sides of the Tāpti, and those of the Wardhā in the west of the Central Provinces. It is likewise largely grown on many other parts of the tableland—wherever, indeed, there is found a peculiar rich soil, very tenacious of moisture, known as the **black cotton soil** of India. **Jute** (59) is a product of Bengal; **indigo** (65), of various places, but most abundantly produced in the north; **tea** (50), of Assam and various parts of the Himalayas (Darjiling, Kumaun in the United Provinces, the Kangra valley in the Punjab, &c.); **coffee**, of the eastern slopes of the Western Ghāts south of about lat. 15° N. (Mysore and Madras); **cinchona** (57), of plantations on the Nilgiri Hills and the Himalayas (Darjiling); **pepper**, of the mountains of the south; **silk**, of Bengal and Assam, the latter yielding the principal supplies of tussur silk derived from the cocoons of wild moths. The great cattle-rearing region of India (81) is a belt extending from Cutch, through eastern Rājputāna and the Punjab, to Kashmīr, a belt in which the rainfall is not so excessive as to wash away all the saline constituents which are found to be so essential to the health of cattle. Cattle are the chief beasts of burden and draught in the greater part of India.

331. For the most part two crops are reaped in the year, but not usually from the same land. In the area of the summer monsoon rains, one crop is generally sown in the early weeks of the monsoon (June and July) and reaped in October and November; the other is sown as the end of the monsoon and reaped from January to March. The latter, accordingly, is the

winter crop ; and as the winter throughout the north-western half of India is at least as cool as the summer of northern Europe, wheat, barley, and linseed are among the winter crops of the region wherever the duration of cool weather is long enough to ripen them. A line drawn from the Tāpti to the upper waters of the Mahānadi may be held to mark approximately the southern limit of wheat cultivation (32). The chief region of production of this cereal is in the Punjab and the United Provinces (Agra and Oudh), that is, far in the north ; but in the extreme south-east of the area just referred to wheat cultivation is rapidly extending.

332. Minerals.—The mineral wealth of India is tolerably abundant, but there are obstacles to its development in the face of foreign (chiefly British) competition. There are some extensive and numerous small coalfields (74) ; but the most extensive, in the west of Bengal and the east of Central India, lies in a region imperfectly explored and not easily accessible, and most Indian coal is much inferior to imported English coal. The chief coal-mining centres are in Bihar and Orissa, 150 miles north-west of Calcutta, at Karharbāri or Giridhi (supplying coking coal) and Jherria. These fields, all near together, supply about four-fifths of the coal raised in India. A few branch lines have been made to coalfields at Umaria, east of Jabalpur, Warorā, in the Wardhā valley, and Singareni, in Haidarābād on the southern tableland. The Singareni coalfield promises to be of great importance to Madras and the south. Iron ore is widely scattered over the country, and with the profuse employment of charcoal for smelting the natives make iron of excellent quality. In the districts most accessible to foreign commerce this expensive mode of working was almost superseded by the import of European iron and iron-wares, but now modern processes of smelting have been successfully introduced. Among other Indian minerals of importance are gold (in Mysore and Madras), copper, salt, and saltpetre. Salt is obtained by evaporation all round the coast, and in the form of rock-salt in the Salt Hills in the north of the Punjab, but the production is not nearly enough to meet the home demand (79). Mica is obtained from Bihar and Orissa, manganese from the Deccan.

333. Manufactures.—Not only in metal-working, but also in

various other branches of manufacture the Indian handicrafts have suffered greatly from European competition and the introduction into India of European methods of production. Cheap Manchester cottons, and more recently the products of the native cotton-factories of Bombay (80), have told heavily on the old hand-spinning and weaving. Even the fine muslins of Dacca (Bengal) and Madras, for which India has long been celebrated, have almost become a thing of the past. Silk-factories worked by steam have been started at Bombay, and jute-factories have long been worked with success in Bengal. In the making of various articles of luxury and art, however, Indian artisans still excel. **Cashmere shawls** are still made both in Kashmir and the Punjab (Amritsar, Ludhiāna, and elsewhere). Rich figured silks are made in various towns. Indian carpets and rugs are articles of export, and so also are a variety of articles skilfully wrought in ivory, gold and silver, copper and brass.

334. Foreign Commerce.—In recent years jute and jute manufactures, rice, seeds (chiefly oil-seeds), raw cotton, hides and skins have formed half the value of the sea-borne exports of British India, including Burma. Among the other leading exports are wheat, tea, manufactured cotton and opium. Cotton manufactures, including yarn, make up two-fifths of the value of the imports, and among the other leading imports of ordinary merchandise are metals, railway materials, machinery and mill-work, sugar, woollen goods, and oil. It is a very remarkable feature of the trade of India that bullion and specie, chiefly in the form of silver, are regularly imported to such an amount that the value, even after deducting that of the exports under this head, is on an average equal to at least a fifth of that of all other imports. As a whole, the trade of India is a striking example of the exchange of agricultural produce for manufactured articles and minerals. Among the countries trading with India the United Kingdom takes the first place, supplying about two-thirds of the value of the imports, and receiving about 25 per cent. of the value of the exports. Trade with Japan, which imports much Indian cotton, is growing rapidly. In the recent history of Indian commerce the most noteworthy feature with regard to the commodities has been a steady rise in the

quantities of nearly all the leading articles of export and import. The principal exception is in the export of opium, which shows a great decline. Under the head of imports the rise has been most marked in sugar. With regard to the countries with which the commerce is carried on, the United Kingdom maintains its position pretty well in the supply of the imports, but the percentage of the exports received by it has greatly declined since 1870, that of Germany, the United States, Belgium, France, and other countries steadily rising meanwhile. This is without doubt due to the fact that articles shipped through the Suez Canal are sent in increasing proportion direct to the countries mentioned instead of being sent first to England, as formerly, in order to be re-exported thence (110).

335. Chief Inland Centres of Trade.—Patna, in Bengal; Benares, Allahābād, Cawnpore, Agra, Bareilly, in the United Provinces; Lucknow, in Oudh; Delhi, since 1912 the official capital of the Indian Empire, Lahore, Amritsar, in the Punjab; Ahmadābād, in Gujārat; Baroda, in the state of that name; Nāgpur, in the Central Provinces; Haidarābād, in the Nizam's Dominion; Mysore and Bangalore, in Mysore; Trichinopoly and Tanjore, in Madras.

336. Seaports.—The foreign sea-borne commerce of India proper (exclusive of Burma) is almost confined to four seaports: Calcutta, Bombay, Madras, and Karāchi, and more than 80 per cent. of the whole falls to the share of the first two.

337. The explanation of this is to be found in the character of the physical features. The coast-line on the east, apart from the delta of the Ganges, and on the north-west is without natural harbours suited for modern vessels, and offers great

Patna . . .	120,000	Baroda . . .	95,000
Benares . . .	200,000	Nāgpur . . .	150,000
Allahābād . . .	160,000	Haidarābād . . .	405,000
Cawnpore . . .	215,000	Mysore . . .	85,000
Agra . . .	190,000	Bangalore . . .	240,000
Bareilly . . .	130,000	Trichinopoly . . .	120,000
Lucknow . . .	245,000	Tanjore . . .	60,000
Delhi . . .	305,000	Calcutta (with suburbs)	1,300,000
Lahore . . .	280,000	Madras . . .	525,000
Amritsar . . .	160,000	Bombay . . .	1,175,000
Ahmadābād . . .	275,000	Karāchi . . .	215,000

341. The landward foreign trade of India has a total value of from six to seven millions sterling each way, including the trade with Kashmir and the Shan States in Upper Burma. The trade through the western passes, which makes up about 20 per cent. of the whole landward trade, has already been considered.

342. **Kashmīr** is the westernmost of the states traversed by the Himalayas. The ruler is a maharajah, who is subject, however, to British control. It is, for the most part, composed of lofty mountains, but includes the lovely valley of the same name lying, at the height of rather more than 5000 feet, in a latitude corresponding to that of northern Morocco. Steps have recently been taken by the government of the state to encourage immigration from India. Srinagar, on the Jehlam in this valley, is the largest town in the state and the centre of trade, the whole volume of which is also equal to about 20 per cent. of the landward trade of India. The chief articles of import into India from or through Kashmīr are shawl-wool; charas, an intoxicating drug made from hemp; borax, and the precious metals. The exports, as in the case of all the other frontier states, include both European and Indian products.

343. The native state of **Nepāl**, the populous parts of which lie south of the main range of the Himalayas, and have many routes to the Indian plains, absorbs more than half the landward foreign trade of India. The chief imports therefrom are food-grains, oil-seeds, timber, cattle, and horns. From **Khāt-māndu**, the capital, two routes branch over the central range of the Himalayas, and by means of these a small trade is carried on with Tibet.

344. With **Sikkim**, **Bhutān**, and the north-eastern states beyond the frontier of Bengal and Assam the trade is very trifling, but hope is entertained of developing a considerable trade with Tibet by a series of easy passes known to exist in Sikkim. These passes, about 13,000, 14,000, and 15,000 feet high respectively, would afford communication with the most productive part of Tibet (**383**), and on the Indian side are within a short distance of the railway to Darjiling.

345. CEYLON.—This island, a British Crown colony, about half the size of England, is mountainous in the south, a level

Srinagar	.	.	.	140,000	|	Khāt-māndu	.	.	.	50,000
----------	---	---	---	---------	--	------------	---	---	---	--------

wooded plain in the north. The south-west, which is the most populous region, gets the benefit of rain from both the south-west and north-east monsoon, and the latter monsoon brings a fairly abundant rainfall to the north-east of the island, but the north-western plains and the coast-strip on the south-east are both somewhat arid. In the south-west the plains and lower hill terraces are covered with coco-nut plantations and rice-fields, belonging mainly to the natives (Sinhalese), and the mountain terraces (below 5000 feet) are occupied by the **tea (50), cacao, rubber, cinchona** and **coffee** plantations of Europeans. Cinnamon also is still an important product, as it has been for thousands of years. The **labourers** on these plantations are mainly immigrants from southern India, most of whom come only for the season, though some of them have formed permanent settlements for themselves on the dreary eastern coast. The island has many minerals, but at present a very pure **graphite (79)**, containing more than 90 per cent. of carbon, is the only one of commercial importance. The principal exports are the plantation products above mentioned, coco-nut oil, graphite, and cinnamon. Pearl-fisheries are carried on in the Gulf of Manar, but they are uncertain. In 1903 they proved successful after a period of failure lasting twelve years. The principal imports are rice (from India), coal (from England and India), and manufactured articles (principally from England).

346. The chief seaport of the island is Colombo. Colombo is connected by rail with the European plantations, and is now the chief port of call frequented by ocean steamers, and has been provided with an excellent artificial harbour. Point de Galle, or Galle, which was conveniently situated for a calling station when the Cape route was the sole route to Calcutta and Rangoon, has now lost its former importance. On the east coast there is a fine harbour at Trincomali, but its situation at a distance from the chief seats of production causes it to be of little value for trade.

347. INDO-CHINA, also called the Eastern Peninsula and Farther India, is the peninsula between India and China. It is now divided between Great Britain, Siam, and France, besides a few small native states, chiefly in the minor peninsula called

Colombo 235,000

the Malay Peninsula. The British territory is made up of the former empire of Burma, separated from India on April 1, 1937, together with the Straits Settlements and protectorates; the French (323), of Lower Cochin-China, Cambodia, Annam, and Tong-king. The northern part of the interior, which is very mountainous, is occupied by Shans, partly belonging to British and partly to Siamese and French territory, but practically in a large measure independent.

348. Surface and Communications.—The mountainous character of a large part of the country, the existence of numerous extensive swamps in the more level tracts of the interior, and the defectiveness of the communications go a long way to account for the low density of population (under 50 to the square mile, except in Tong-king, which is estimated to have a population of more than 160 to the square mile). Among other causes have been devastating wars, inroads of robber bands from the mountains, and other consequences of the want of strong government. Since Lower Burma has been in the hands of the British there has been a constant stream of settlers southwards and westwards, as well as of emigrants from India proper into that territory; and population, production, and commerce have rapidly increased.

349. With regard to the communications of the peninsula, it is noteworthy that some of the chief rivers are very defective as waterways. Above the large and densely peopled delta in Tong-king the Song-koi is navigable to within the Chinese frontier; but the longest river of the peninsula, the Mekong, has its navigation greatly impeded by rapids, the lowest of which are situated to the south of the Siamese-Cambodian frontier. The Menam, in Siam, is navigable for steamers only to the confluence of the two main head-streams, which meet to the south of 16° N., and of these the eastern one is the only one navigable by boats. Timber is floated down the western branch. The Salwīn, in Burma, is scarcely navigable at all except at the mouth. Of all the rivers of the peninsula the Irāwadi, the chief river of Burma, is the most important for its navigation. This river is regularly navigated by steamers as high as Bhamo, in about latitude 24° N., a distance of about 900 miles, but there the further progress of steamers is impeded by rapids. The

Kyendwin or Chindwin, the chief tributary of the Irāwadi (right bank), is also navigated by boats, but is ascended with no little difficulty on account of the strength of the current, which makes it a matter of three weeks to reach a point about 250 miles up.

350. Where there are no navigable rivers goods are mostly carried laboriously and expensively on the backs of elephants, oxen, ponies, and other beasts of burden, or by human porters. In some places carriage has already been cheapened by the construction of **railways**, and there are now various projects actively promoted for the extension of this means of transport. The chief railways already in existence are two starting from Rangoon, the principal port of Burma. These railways have been constructed on opposite sides of a range of mountains on the east of the Irāwadi, the one proceeding to Prome, an important town on the Irāwadi, and the other past Mandalay, the capital of Upper Burma, higher up the Irāwadi. Saigon, the chief port of Cochinchina, has been connected by rail with Mytho, on one of the main arms of the Mekong delta, although the Saigon river is likewise connected with the larger stream by a natural navigable channel uniting these two ports. A railway running eastwards from Bangkok, the capital of Siam, to Khorat, partly through a rich alluvial plain, was opened at the end of 1900, and a northern branch to Zimme, Chiangmai, or Kiangmai, is in progress. Hanoi (352) is connected by rail with the port of Haiphong, and a line up the Song-koi to Laokai, the limit of navigation, has been extended through Mengtse or Mongtse to Yünnan-fu, in southern China.

351. **Productions and Commerce of the Main Divisions** (exclusive of the Malay Peninsula).—In Burma, Siam, and Cochinchina rice is the principal product and the principal export. In Burma, teak, the valuable shipbuilding timber, chiefly derived from the mountain slopes of Upper Burma, is the second in value among the exports. Among the other products of Burma are cutch (66), rubber, petroleum, coal, gold, jade, and rubies. Petroleum has long been a commercial product of some importance both in Lower and Upper Burma. It is obtained both

Rangoon	.	.	.	340,000	|	Bangkok (and district) (?)	930,000
Mandalay	.	.	.	150,000	|	Zimme, or Chiangmai . (?)	100,000

from islands on the west coast and in the Irāwadi valley. **Three coalfields** are known in Upper Burma, that supplying the best coal being in the valley of the Kyendwin. Gold, jade, and rubies are all products of the northern parts of Upper Burma. The Burmese **jade** forms the chief supply of that mineral in the markets of China and Japan, where it is of great value. The **ruby-mines** of Burma (at Mogok, a high valley to the east of the Irāwadi, about half-way between Mandalay and Bhamo) furnish the only rubies of the finest colour to be found anywhere. From **Siam**, also, teak is an important export, and oil-seeds (62) are among the chief products both of Siam and the French possessions. The leading exports of **Tong-king** are rice and animal products, of Annam sugar, cinnamon, and "false gambier." The trade of Burma is mainly with the United Kingdom, India, and Ceylon. Only a small portion of that of the other great divisions of Indo-China is carried on with European countries, China and other eastern countries having the largest share.

352. Seaports.—(1) **Burma.**—Rangoon stands on the Rangoon River, an arm of the Irāwadi delta, but one which is not navigable directly to the Irāwadi itself, although in the rains there is a navigable connection with that river. Two-thirds in value of the exports of Burma are shipped from this port. The minor ports of Burma are Bassein, on a western arm of the Irāwadi delta; Akyab, on the Bay of Bengal, the port of the division of Arakān; Maulmain, at the mouth of the Salwin, the chief port of the Tenasserim division; Mergui and Tavoy, still smaller ports on the still narrower parts of Tenasserim farther south. Maulmain, like Rangoon, can be kept open for large vessels, but much dredging is necessary at the former port to keep the approach free from obstructions. (2) **Siam.**—Bangkok, the capital, on the **Menam**. A bar at the mouth of the Menam prevents this port from being reached by ocean-steamers. (3) **Annam.**—The chief harbour and port is Turan, or Tourane, which lies about half a degree to the south of Huē, the capital of the province. (4) **Tong-king.**—The chief seaport of this territory is Haifong, or Haiphong, on the delta of the Song-koi, a port created at great expense on former rice-swamps.

Maulmain	,	,	,	60,000	|	Huē	30,000
----------	---	---	---	--------	--	-----	---	---	---	---	--------

Hanoi, near the head of the delta of the Song-koi, accessible to smaller sea-going vessels, is the capital, not only of Tong-king, but, since the beginning of 1902, of the whole of French Indo-China. Hongai, in the north-east of Tong-king, exports fair coal.

353. The Malay Peninsula is the name of that part of Indo-China which projects south-eastwards nearly to the equator. It is mountainous and densely forested, but at the Isthmus of Kra (between 10° and 11° N.) it has often been proposed to utilise a gap in the mountains for a ship-canal. This would shorten the route from Calcutta to China by 660 miles, and that from Burma to Bangkok by 1300 miles. The peninsula is partly under British rule, partly divided among a number of small states. The states in the north acknowledge a certain allegiance to Siam, but those in the southern half are more or less under British influence. The island of Singapore in the extreme south, the small territory of Malacca on the west coast, and the island of Penang, with one or two smaller islands and the patch of mainland called Province Wellesley farther north, form the British Crown colony of the Straits Settlements. The remainder of the south is occupied by the Federated Malay States of Perak, Selangor, Negri Sembilan, and Pahang (under British protection), the protected states of Kedah, Kelantan, Trengganu, and Perlis, and the independent state of Johor, which, however, has placed itself under British control as regards its foreign relations. The governor of the Straits Settlements also controls the Cocos or Keeling Islands, Christmas Island in the Indian Ocean, and Labuan.

354. The natives of the peninsula are Malays, whence the name; but the Malays are being ousted in trade and industry by settlers of a more enterprising temperament. These are mostly Chinese and Indians, the latter mainly from southern India, and known in the peninsula as Klings.

355. Gutta-percha and many other tropical products are obtained from the forests and plantations, but the chief export product is **tin**, for the mountains running through the peninsula and reappearing in islands farther south (362) are the richest part of the world in this metal. The largest supplies of tin in

Hanoi 135,000

the peninsula are at present obtained from Perak, in the north west of the British region. A railway traverses the peninsula and is joined to the Siamese line from Bangkok.

356. Malacca, which was the chief seaport from the time of the Portuguese discovery of the seaway to the east at the end of the fifteenth century till the nineteenth century, has a harbour unsuited to modern ships, and has been eclipsed by the modern ports of Singapore, Penang, Port Swettenham, Port Weld, and Teluk Anson. Singapore, founded in 1819, on the island of that name, with a causeway to the mainland, besides being a great coaling station and a first-class naval and air port, is one of the most important distributing centres in eastern waters, receiving commodities from surrounding countries to despatch them in other directions. Here, and in Province Wellesley opposite Penang, are great tin-smelting works.

357. THE EASTERN, OR MALAY, ARCHIPELAGO embraces all the islands in the south-east of Asia, with the exception of those belonging to China and Japan, as well as of New Guinea, and the islands immediately adjacent. The islands are for the most part in the possession of **European powers**, and the greater number belong to the Dutch. To the Dutch belong the Great Sunda Islands of Sumatra, Java, and Celebes, with the greater part of Borneo; all the Lesser Sunda Islands, except the north-east of Timor, which is Portuguese; and theirs also are the Moluccas which lie between Celebes and New Guinea. In point of production and commerce **Java** and the adjacent smaller island of Madura are the most important of the whole group. The possession of a rich volcanic and alluvial soil, together with facilities for irrigation, gives it great natural advantages. These have been turned to excellent account under the efficient system of government pursued by the Dutch, so that these two islands, though only about equal in area to England exclusive of Wales, and thus containing less than one-fifteenth of the land belonging to the whole archipelago, support two-thirds of the population of the group. **Sugar-cane** is the chief plantation product, but **tea**, **cinchona**, **tobacco**, **coffee**, **rubber**, and **cacao** are rising in importance.

358. Batavia, on the north coast in the west of Java, is the
Singapore (island) . . . 560,000 | Batavia 250,000

capital of all the Dutch possessions in the East, and has a trade similar to that of Singapore. Its harbour having become silted up, a new harbour (Tanjong Priok) has been constructed six miles away. On the hills to the south of Batavia stands the charmingly situated town of Buitenzorg, a sanatorium for Europeans, and the seat of a palace of the Governor-General of the Dutch East Indies. Surabaya is the chief port in the east of Java. It lies opposite Madura, which is separated from Java by a strait so shallow that the navigable channel is only about 17 feet deep.

359. Besides Java the only islands belonging to the Dutch that need be mentioned on account of their agricultural commercial products are Sumatra, Celebes, Bali, and the Moluccas. **Sumatra** is a large island with a backbone of mountains in the west, and an alluvial plain about 600 miles in length and from 60 to 110 miles in width on the east. This plain is, however, to a large extent marshy and thinly peopled. The chief commercial product is **rubber**. Coffee is obtained from the mountain slopes. In the north-east, however, round Deli, the soil has proved to be admirably adapted for the cultivation of **tobacco**, which is hence rapidly extending here, and leading to the neglect of this crop in other parts of the Dutch East Indies. The chief ports of Sumatra are Belawan (port of Deli), Padang on the west coast, and Palembang on a navigable river traversing the eastern plains.

360. The surplus products of **Celebes** are obtained mainly from the peninsula of Menado in the north-east, where there is a rich volcanic soil, formerly producing coffee and now cacao. The most valuable exports are copra (**62**) and forest products (canes and resin). Macassar, in the south-west of Celebes, has a fine roadstead, and on that account, as well as because of the other advantages of its situation, is a place of great commercial importance.

361. The **Moluccas**, or **Spice Islands**, are still noted for the spices, especially cloves and nutmegs, to which they owe their name. **Cloves** are chiefly cultivated in Amboina, and **nutmegs** in the Banda Islands, to which these two products were at one time absolutely restricted. Both Amboina and the Banda group lie to the south of Ceram. The small islands of Ternate

and Tidore, to the west of Halmahera or Jilolo, were each formerly the seat of a powerful sultan, and Ternate is still the centre of local trade in these eastern waters.

362. Besides agricultural produce the Dutch East Indies are of commercial importance from their mineral wealth. Till recent years the tin of the islands of Banka and Billiton, which form the continuation of the tin-bearing region of the Malay Peninsula, was the only mineral that had attained any great value in commerce, but now petroleum (76) is also very important. Coal is abundant in Sumatra and Borneo. Celebes has immense deposits of iron ore.

363. The whole of northern Borneo is now under British protection. It is made up of a section in the north-east subject to the British North Borneo Company; another, to the south-west, to the native sultan of Bruni; and a third, Saráwak, still farther to the south-west, to a raja of British family. In British North Borneo there is, besides coal, a goldfield, which is approached by a navigable river; but the chief articles of commercial value at present are tobacco and jungle produce—rattans (61), gutta-percha, camphor, rubber, &c., besides timber. Cultivation is, however, receiving attention. The soil is well suited to the growth of that valuable kind of tobacco used for cigar-wrappers. Sago plantations have also been formed, and encouragement is offered by the government for the establishment of cotton plantations. There is an admirable natural harbour at Sandakan on the east coast, with 26 feet of water on the bar at the lowest spring-tides, and the climate is said to be healthy. Saráwak is said to furnish more than half the total sago produce of the world.

364. The small island of Labuan (353), to the west of the native state of Bruni, is a British Crown colony. It has a good port and coal deposits, the yield of which has lately been increasing.

365. The Philippine Islands, along with the island of Paláwan and the Sulu Archipelago, formerly Spanish, have belonged to the United States since 1898. They are volcanic and subject to destructive earthquakes. The great bulk of the population of these islands inhabit Luzon, which is accordingly the only island of great commercial importance. The chief commercial

products are **Manila hemp** (59), sugar, tobacco and cigars, and **copra**. Railways, starting from Manila, the capital and chief seaport of the group, at the head of a bay on the south-west of Luzon, run both north and south. The northern line passes through the chief hemp and sugar districts to another bay on the west side; the southern sends a branch to the sugar-growing centre of Batangas. Chinese immigration and industry have added greatly to the productiveness of the islands in recent years. The bulk of the trade is with the United States, with which alone there is free trade.

366. CHINA.—This vast country, proclaimed a republic on February 12, 1912, is the only part of the mainland of Asia besides India and Tongking with a dense population. Trust-worthy returns as to the population are wanting, but there can be no doubt of the general fact that the most extensive region in which the density is above the average of the whole is the great plain in the east, which stretches from the mountains in the north of Peking to those south of the Yangtse-kiang. This plain thus extends, roughly speaking, through ten degrees of latitude, from about 30° to 40° N., and its greatest width is about the parallel of 35°. It reaches everywhere to the coast except in the province of Shantung—that is, “the Eastern Mountains”—the province which juts out in the peninsula between the Yellow Sea and the Gulf of Chili or Pechili.

367. Another region of high density is in the south-east, forming the province of Kwangtung, which contains the great delta of the Si-kiang or West River. In the west there is a third region of exceptionally high density of population in the east of the province of Sechwan and the north of Yünnan, where, besides great mineral wealth, there is a peculiar red soil of extreme fertility. West of the great plain China is for the most part elevated and to a large extent mountainous, but even the elevated regions are in some places capable of supporting a numerous population. This is so, for example, in the region of the red soil just referred to, and in extensive areas of the northern half of China, which is covered with a yellow soil known as loess, which is very fertile under irrigation.

Manila 325,000

368. Communications throughout the great plain of China are naturally easy. Inland navigation is carried on both by rivers and canals, and one great canal, 700 miles long, runs through nearly the whole length of the plain. Commencing at Hangchow (375), it crosses both the Yangtse-kiang and the Hwang-ho, and terminates at Tientsin, the inland port of Peking. Not being kept in proper repair, however, this canal is no longer navigable throughout its length. Navigable rivers facilitate the communication between the great plain and the province of Kwangtung.

369. Between the east and the west of China, however, communication is not so easy. Three great rivers, the Hwang-ho or Yellow River in the north, the Yangtse-kiang in the middle, and Si-kiang or West River in the south, cross the country from west to east, but only the second of these is of great service for navigation. The Hwang-ho, well called 'China's sorrow,' is too rapid, too much obstructed by shallows, and too shifting in its course to be easily navigated. Its shallowness is in a large measure due to the fact that the abundant waters which it brings down from the mountains are drunk up by the porous loess over which it flows in the plains. In this part of its course it is also liable to cause terrible destruction by sudden changes of its bed. At certain periods it has entered the sea by a north-easterly course leading into the Gulf of Pechili, which contains its present mouth; at others by a south-easterly course into the Yellow Sea.

370. The Yangtse-kiang is an admirable watercourse as far as the town of Ichang in about $111\frac{1}{2}^{\circ}$ E.—that is, for above a thousand miles from its mouth. Thus far steamers can ascend, and even ocean-going steamers can reach as high as Hankau (Hankow), and there get loaded with tea and other products for Europe and America. Beyond Ichang, however, a series of difficult rapids impede the navigation for about four hundred miles; and as the mountain tracks between Ichang and Chungking, the great river-port of Sechwan, are likewise extremely difficult, that rich province is in a large measure shut off from communication with the great eastern plain. This obstruction to communication is all the more serious from the fact that the provinces thus shut off from one another are mutually

deficient in commodities which the other supplies. Rich as the soil of Sechwan is, it is not suited to any great extent for cotton, which in China is mainly grown on the loess (367). On the other hand, Sechwan is one of the richest of all Chinese provinces in silk, and both it and Yünnan are well adapted for opium. Eastern Sechwan and northern Yünnan, moreover, might be described as one enormous coalfield, and yet the coal used in the river-steamers at Ichang is imported from Japan. Salt, copper, and the precious metals are also among the products that this part of western China yields in abundance.

371. The third of the great rivers above mentioned, the Si-kiang, is navigable more or less for the greater part of its course, but rapids impede the navigation in many places.

372. **Agriculture** is pursued in China with great industry and skill, and the chief products of the country are agricultural. **Manufactures** are still largely domestic, and the raw materials are mainly produced in the country. China is, however, being rapidly industrialised. Leaf-rolling machinery has been introduced by Chinese tea-growers; cotton-mills of the most modern type have been erected at Shanghai, Hangchow, Ningpo, and elsewhere; silk mills at Suchow; iron and steel works at Hanyang; and shipbuilding yards at Shanghai. Silks, cottons, and China-grass (59) fabrics, the last chiefly for summer wear, are largely made. Woollen garments are little worn, except by the rich. In winter the well-to-do classes of northern China protect themselves against cold by wearing furs, but cotton garments, padded and quilted, form the general winter clothing.

373. **Foreign Commerce.**—Raw silk, silk manufactures, tea, beans, and bean-cake are the chief exports, and the principal imports are cotton and other manufactures, opium, rice, sugar, and metals. The recent history of Chinese commerce shows several noteworthy features. On the export side there has been a great decrease in the amount of tea exported by sea, but this has been partly balanced by a great rise in the amount exported overland, chiefly by way of the Trans-Siberian Railway. The exports of silk-refuse (which is now manufactured in Europe into silk fabrics), of silk goods, and of straw-braid (which is now an export of considerable value) have all rapidly increased in amount in recent years. Of the raw silk exported

there has been since 1894 a rapidly increasing proportion of silk reeled by means of steam filatures. On the import side there has been a decline on the whole in the amount of Indian opium imported (49), but there has been a pretty steady rise in the amount of the coal import, and a rapid rise in that of petroleum.

374. From the table at the end of the book it appears that the foreign commerce of China is very small in proportion to the population. For this there are several reasons. First, China is a country of vast size, with very diverse climates and products. In area it is equal to about the half of Europe, if we leave out of account the almost uninhabited parts of Russia and Scandinavia. As it extends into the tropics, the variety of its natural products is even greater than in Europe; so that the deficiencies of one part of the country can be supplied by the products of other parts, and the trade between different provinces may be compared to the trade between different countries of smaller extent. A second reason for the small amount of the foreign commerce of China is that the Chinese government in its intercourse with foreign countries still shows a great deal of jealousy of foreign encroachment. Foreign merchants and foreign shipping are restricted to certain ports, known as *treaty ports*, which have rapidly increased in number and now total over fifty. Among these are all the chief sea-ports and most of the principal river ports. They include, from north to south, Tientsin, Shanghai, Hangchow, Ningpo, Wenchow, Fuchow, Amoy, Swatow, and Canton, together with the great river ports of the Yangtse—Chinkiang, Nanking, Kiukiang, Hankow, Shasi, Ichang, and Chungking.

Tientsin . . .	1,400,000	Kiukiang . . .	45,000
Shanghai . . .	2,675,000	Hankow . . .	400,000
Hangchow . . .	430,000	With the adjacent Han-	
Ningpo . . .	213,000	yang on the opposite	
Wenchow . . .	680,000	bank of the Han,	
Fuchow . . .	400,000	and Wuchang on the	
Amoy . . .	200,000	opposite bank of the	
Swatow . . .	140,000	Yangtse, from 1,000,000	
Canton . . .	815,000	to 2,000,000	
Chinkiang . . .	155,000	Shasi, or Shashi . .	95,000
Nanking . . .	525,000	Chungking . . .	635,000

375. By far the most important of the treaty ports, especially for imports, is Shanghai, the great outlet of the Yangtse valley, and a great *entrepôt* for central and northern China. It is situated not on the Yangtse itself, but on a small tributary called the Wusung, or Hwang-pu. Canton is the principal treaty port of southern China. It is situated at the head of the extremely fertile and populous delta of the Si-kiang, and of the Chu-kiang, or Pearl River, the chief arm of that delta. Of the interior ports by far the most important is Hankow. It lies at the head of navigation for large steamers about the middle of the very populous plain of the middle Yangtse, and at the meeting-place of four waterways leading respectively south-east (a lower reach of the Yangtse), south-west (an upper reach of the Yangtse), north-west (the Han), and west (a canal joining the Han to a higher reach of the Yangtse). Hangchow, situated just west of the gulf of that name (south of the estuary of the Yangtse-kiang), with important silk manufactures, is not a port open to sea-going ships, inasmuch as it is cut off by embankments from the adjoining gulf in order to protect it from the high and violent tides, known as bores, to which that gulf is exposed. Suchow is a great silk-weaving centre, 70 miles west of Shanghai. Shasi, an important river-port on the Yangtse-kiang between Hankow and Ichang, is the collecting, grading, and shipping centre for the most important cotton-weaving district in China.

376. A large part of the foreign, and especially the British, trade of China is centred at the British Crown colony of **Hong-kong**, an island situated immediately to the north of the entrance to the estuary of the Si-kiang. It is the great *entrepôt* for all China south of the Yangtse valley. More than one-third in value of the Chinese imports enter the country from this colony, and the great bulk of the remainder is derived directly from India and the United Kingdom. This colony also receives about one-fourth of the value of the Chinese exports. **Macao**, at the south of the same estuary, belongs to the Portuguese. **Kiaochow Bay**, on the south side of the Shantung peninsula, formerly German, is now restored to China. The harbour of **Wei-hai-wei**, on the north side of the same peninsula, leased to Great

Suchow 260,000

Britain in 1898, was handed back to China in 1922. In December 1905 the Liautung Peninsula, with the fortress of **Port Arthur**, was leased to Japan.

377. The chief obstacle to the development of the foreign commerce of China is the deficiency of the great modern means of internal communication and of production. Both have hitherto been regarded by the Chinese authorities with noted dislike, chiefly, it would appear, from dread, partly from contempt, of the foreigner. In recent years signs of change in this respect have not been wanting. The electric telegraph already connects the remotest inland cities with the capital. The first railway in China was a short line from Shanghai to its outport Wusung, opened in 1876, but it was purchased by the viceroy of the province and torn up in the following year. Afterwards a railway was laid from the Kaiping collieries, east of Peking, to the mouth of the Pei-ho, and at a later date, from this latter point to Tientsin. The continuation of the Kaiping line north-eastwards to Manchuria was afterwards encouraged by the government for strategic purposes. In 1897 Tientsin was connected by rail with Peking, and since then further railway concessions have been granted. Under these concessions Peking and Hankow were connected by railway by the opening of the bridge over the Hwang-ho in 1905. This line is now being continued on the opposite side of the Yangtse to Canton, which is already connected by rail with Kaulun, the British territory opposite Hong-kong. A northern branch from the Peking-Hankow line runs westwards to Taiyuen-fu, the capital of Shansi. Peking is now also connected with the south by a more easterly route, a continuation of the Tientsin line to Nanking, Shanghai, Hangchau, and Ningpo, with a branch to Kiauchou. For the French railway through Mengtse to Yünnan-fu see par. 350.

378. With regard to the effect ultimately to be expected from railways in China it is important to note that China, though not as yet producing large quantities of minerals, nevertheless possesses vast stores of undeveloped mineral wealth, and above all of coal and iron. The whole area of the coalfields of China is estimated to be perhaps twenty times as great as that of all the coalfields of Europe. These coalfields exist in many

places where there is already a dense population, and much of the coal is of excellent quality. The Kaiping coalfield has long been worked by European methods. Other small coalfields exist to the west of Peking. Large coalfields, containing both bituminous and anthracite coal, lie in the west of the mountains of Shantung (now under Japanese control). But the great coalfields of China lie farther in the interior. One of these (that of Sechwan and Yünnan) has already been referred to (370). Others occupy the province of Shansi, at the height of between 2000 and 3000 feet above sea-level. The south-east of this province forms one of the most remarkable mineral regions in the world. A deposit of anthracite (74), very thick, and capable of being worked with great ease, here extends over about 13,500 square miles, which is more than the area of all the British coalfields. An outlying portion, the Chinghwa coalfield, lies on the slope of the plateau in northern Honan. The whole of south-eastern Hunan has been described as one enormous coalfield. The Shansi coalfield is rich in iron ores, as well as in potter's clays. Pig iron produced at Hanyang from ores obtained near the Yangtse has already been exported even to the United States. Hunan produces much antimony; Yünnan copper, silver, and tin.

379. Chief Inland Towns.—Capital, Peking. Among the other large towns, which are very numerous, may be mentioned Singan-fu, Hsian-fu, or Sian-fu, near the Wei-ho, a tributary of the Hwang-ho, on the edge of a fertile and populous plain, and at the point where the road along the Wei-ho and Hwang-ho valleys eastwards is joined by the road leading across the pass that connects the Singan-fu plain with central China (Hankow); Chengtu-fu, capital of the province of Sechwan, situated on a level plain about 2000 square miles in extent, one of the most carefully irrigated and most productive areas in the world; Yünnan-fu, capital of the province of Yünnan; Nanking, on the Yangtse-kiang, on which river lie several other important towns already named among the treaty ports (374).

380. THE CHINESE DEPENDENCIES.—China proper is bordered by various territories more or less directly under Chinese

Peking	1,300,000	Chengtu-fu	(?) 500,000
Singan-fu	700,000		

rule. **Manchuria**, the most important of these, now forms the nominally independent empire of Manchukuo with its capital at Hsinking, on the railway, about halfway between Mukden and Harbin. It is mountainous in the east and west, the eastern mountains being rich in places in coal and iron. The level and fertile plain is drained partly by the Liau-ho into the Gulf of Pohai, partly by the Sungari into the Amur. The population was till recently scanty, but the southern province contains many Chinese settlers. Among other products, wheat and soya beans are extensively grown. The capital of Manchuria was Mukden, on a tributary of the Liau-ho; the chief port, Niuchwang (Newchwang), a rising treaty port. Even the northern provinces, however, have a considerable population, and have several important towns. Among these are Kirin, on the Sungari (the valley of which is now receiving many immigrants), and Tsitsihar on its tributary the Nonni. Both places can be reached by steamers. Harbin is a new town built under Russian auspices at the point where the railways originally built by Russia diverge for Vladivostok and Port Arthur respectively. Dairen (formerly Dalny), with great iron and steel works and large oil-mills crushing soya and other seeds, has been under Japanese control since 1905.

381. Mongolia, west of Manchuria, is a tableland, occupied mainly by pastoral tribes, surrounding the desert of Gobi. Maimachin, one of the chief seats of trade between China and Russia (298), lies on its northern frontier. As the result of a revolution in 1924, Outer Mongolia adopted a constitution based on the Soviet model. Wool, skins, and furs are exported. Some gold is mined. Trade is mainly with the U.S.S.R. Urga is the chief town.

382. Sin-Kiang, formerly Turkistan, occupies the basin of the Tarim, and is separated from Mongolia by part of the Chinese province of Kansu. It also is a table and with a desert in the interior, but the oases at the base of the mountains which enclose the tableland are highly cultivated. Kashgar and Yarkand still maintain a caravan trade with China, and they are the centres of the trade carried on across the passes of the Pamir (320).

Mukden	.	.	.	250,000	|	Dairen	.	.	.	220,000
--------	---	---	---	---------	--	--------	---	---	---	---------

383. Tibet, a lofty tableland, or series of tablelands, traversed by mountains, and bounded on the south by the Himalayas, is very scantily inhabited, and most of the inhabitants are confined to the valley of the Brahmaputra (Sanpo). It is tributary to China, but pays only a slight allegiance to the Chinese government. The actual ruler is the Grand Lama, the head of a peculiar form of the Buddhist religion. He resides at Lhasa, a town about 12,000 feet above sea-level. The country produces fine wool, including cashmere wool. In 1894 foreigners were allowed to advance as far as Yatung, to the north of the Himalayan state of Sikkim, for trade, but the trade with British India is nevertheless still small, and tea, which is regarded almost as a necessary of life by the natives, is still introduced mainly by difficult mountain routes from China, although the tea so imported is of poor quality. Lhasa was entered by a British force on the 3rd of August 1904, the first occasion on which Europeans saw the city since 1846.

384. JAPAN.—This is the European name of an insular kingdom in the east of Asia. The native name is Nippon, a name also applied to the main island of the group (Hondo, or Honshiu). Adjacent to Honshiu on the south and south-east are Kiushiu and Shikoku, and these three islands contain the great bulk of the Japanese population. North of the Strait of Tsugaru lies the large island of Hokkaido (Yezo), which also belongs to the Japanese Empire; and to this empire belong likewise the Kurile Islands, between Hokkaido and Kamchatka; the southern half of Sakhalin, called Karafuto by the Japanese; the Riu-kiu (Lu-chu) Islands and Formosa (Japanese, Taiwan), south-west of Kiushiu; and the Bonin Islands to the south-east. As to Polynesian possessions see par. 615.

385. Many circumstances suggest a comparison of this kingdom with the British Isles, but the points of contrast are even more noteworthy than those of resemblance. In area Japan is about one-fourth larger than the British Isles, but the two kingdoms are more nearly equal in population, and they are like one another in being insular, in being situated near the more populous side of the neighbouring continents, and in being rich in minerals. On the other hand, they contrast with one another in the character of their surface, climate, and principal productions.

The entire group of the Japanese islands is highly volcanic and subject to frequent earthquakes ; the surface very mountainous and irregular. This greatly hinders internal communication ; so that till 1892, after twenty years of more or less active railway construction, there were only two railways connecting the opposite sides of the main island (comp. 108). Moreover, the railways proceeding inland have great windings, which greatly increase the distance by rail between important places. The direct distance from Tokyo, the present capital, to Kyoto, the old capital, is about 230 miles (about as far as from London to Durham) ; the distance by rail is 338 miles.

386. Agricultural Products.—The irregular character of the surface also greatly limits the productive area. Less than 30 per cent. of the surface is reckoned as productive, and less than one-eighth of Japan proper is devoted to agriculture, including pasture (89). But the nature of the climate makes up for this disadvantage. There is, indeed, a much greater difference between the cold of winter and the heat of summer than in the British Isles (8), but the heavy rains of the warm summers (9) enable rice (54) and other tropical products to be grown, so that a dense population can be maintained on a small area. **Floods**, however, not infrequently cause immense destruction to crops, roads, and buildings. Besides rice, wheat, barley, and beans, **tea, silk, and lacquer** are among the more important agricultural products of Japan. Camphor is a valuable product of the very extensive forests. There are few of the larger domestic animals. Sheep do not thrive. Cattle are employed as beasts of draught and burden. Japan is thus altogether without, or very poorly supplied with, some important products. It has no native wool, no milk, butter, or cheese, and has only a comparatively small supply of leather. The fisheries are important.

387. Minerals.—The mineral wealth needs development. The coal production (in the west of Kiushiu and the west of Hokkaido) is rapidly increasing (74) ; so also is that of **copper**. **Antimony and silver** are also among the Japanese exports. Petroleum is produced in the west of Honshiu, and sulphur in the east of Hokkaido. Iron ore abounds, but not for the most part in convenient situations.

388. Progress.—Since the great revolution of 1868 the

Japanese have been making every effort to get abreast of the most advanced European countries as regards the methods of production and transport. The first railway was opened in June 1872. Now, in spite of the difficulties placed in the way of their construction by the mountainous character of the country, there are nearly 13,000 miles of railway. The first native steamship company was established in 1874. Now magnificent Japanese vessels are to be seen in all waters, and many of these have been built in Japan. **Machine cotton-spinning factories** have been established with great success, chiefly since 1882 (80). Cotton-weaving mills have followed. **Paper-mills** worked by machinery have also been erected. Japanese machine-made matches have now supplanted Swedish matches in China, and even in Siam and the Straits Settlements. The extensive water-powers are being developed. Great iron and steel works have been started by the Government at Wakamatsu, at the western entrance of the straits separating the island Kiushiu from the south-west of Honshiu, but the ore is nearly all obtained from the Chinese province of Hupeh. See also 384, 385.

389. Foreign Commerce.—The recent rapid growth of manufacturing and mining industry has had a remarkable effect on the foreign commerce. Formerly the leading imports were textile manufactures, but now the chief import is raw cotton,¹ and the imports of manufactured iron and machinery are increasing much more rapidly than those of textile manufactures. The imports of grain and flour for the industrial population have also become very large. Among the exports silk is still the most important, as it has been for many years, and it is rapidly increasing, but the next in importance is now silk manufactures, instead of tea, as it used to be, and the value of the tea export is now nearly equalled by that of coal, the export of which is steadily growing. Among other important exports are cotton manufactures, copper, matches, lacquer-ware, paper, &c. Great Britain, India, China, the United States, and Germany supply most of the imports. The United States are the largest market for Japanese silk and tea, and take the largest share of the exports, China and France coming next.

¹ The import of raw cotton increased from about 9,000,000 lb. in 1886 to over 800,000,000 lb. in 1912.

390. Formerly restrictions were placed on the commerce of Japan with foreign countries and the settlement of foreigners in the empire similar to those which are enforced in China; but in 1899 the whole country was thrown open to foreigners. The most important seaports are Yokohama, with the adjacent Kanagawa (the residence of the consuls), on the Bay of Tokyo; Kobe (including the adjoining Hyogo), on a bay to the south of Kyoto, with which it is connected by rail; and Nagasaki, on the south-west coast of the island of Kiushiu. All these have deep and spacious natural harbours. Nagasaki, being in the vicinity of coal-mines, is now much frequented as a coaling station, and has a large export of coal. It has a large shipbuilding yard, with machine-shops, boiler-works, and foundries. Deshima, an artificial islet close to Nagasaki, was the seat of a Dutch factory or trading station as far back as 1641. Tokyo itself is also a seaport, but its harbour is shallow. The same defect impedes the growth of foreign commerce at Ozaka, the chief seat of the cotton-spinning industry, which lies on the same bay as Kobe, and is frequented by great numbers of native craft. Niigata, the principal port on the west coast, has its shipping stopped for half the year by the strong surf that beats along the whole of this flat and dangerous coast during the prevalence of the winter monsoon, which blows from the north-west across the Sea of Japan from the area of high pressure in the north-east of Asia.

391. The capital of the country is Tokyo. The chief inland towns are Kyoto and Nagoya, the latter on the railway connecting Tokyo and Kyoto. Though Nagoya appears on the map to be a seaport, being situated at the head of Owari Bay, it is in reality inaccessible to ships through the silting up of the neighbouring waters.

392. Hakodate, on Tsugaru Strait, the chief port of Hokkaido, has only a small foreign trade. This large island, though said to have 25 per cent. of its surface fit for agriculture,

Yokohama . . .	620,000	Tokyo . . .	2,100,000
Kobe . . .	790,000	Kyoto . . .	765,000
Nagasaki . . .	205,000	Nagoya . . .	910,000
Ozaka . . .	2,455,000	Hakodate . . .	195,000
Niigata . . .	125,000		

has a severe climate, and at present has only a scanty population on the coast, chiefly engaged in fishing (salmon, herring, cod), though there is now, as already intimated, also a mining population. The Japanese Government is endeavouring to develop its resources.

393. Formosa, or Taiwan, is traversed from north to south by a range of mountains which, along with the eastern plain, are inhabited by a semi-barbarous people. The inhabitants of the western plain are mainly of Chinese origin, but not of a high type. The chief exports are tea and camphor, the latter a government monopoly. The capital is Taipei, near the northern end, connected by rail with the port of Kilung, or Kelung, which has an excellent anchorage, and near which are mines of good soft coal capable of being mixed with Welsh coal for use on steamers. Improvements are projected on the harbours of Anping and Takau on the west coast to promote the sugar industry, which is carried on in the neighbourhood.

394. Korea, or Chosen, as it is called by the Japanese, the mountainous peninsula between the Yellow Sea and the Sea of Japan, was till 1895 a loose dependency of China. It then became independent, but in 1905 it passed under the influence of Japan, to which it was annexed in August 1910. The chief open ports are : Chemulpho on the west coast, Fusan on the south-east, and Wönsan or Yuensan, on Broughton Bay on the east coast. Chemulpho is the port of the capital, Seoul, or Keijo-fu. Cotton and flax are grown. Coal is mined. A railway from Mukden runs through Seoul to Fusan. Gold, beans, and rice are the chief exports. Among other exports is ginseng, a drug highly valued by the Chinese. The imports include cotton goods, machinery, kerosene, grass-cloth, and sugar.

AFRICA.

395. This continent, though not the least populous either in respect of the absolute number of the estimated population or the average density, is that which is of least importance as regards its contribution to external commerce. This may be ascribed, among other causes (430), to natural unproductiveness

Keijo-fu 340,000

arising from want of rain. Africa lies as a whole in latitudes where the atmosphere is always able to retain large quantities of vapour uncondensed. Its surface is made up mainly of plateaux with bordering mountains, so that the interior is in most parts reached only by winds that have been deprived of the greater portion of their moisture (9). The only regions with fairly abundant rainfall are certain parts of the equatorial region, narrow strips on the east and south-east coast, and part of the north coast in the neighbourhood of the Atlas Mountains. In the last-mentioned region and in the hinderland of Cape Town the climate is Mediterranean (9). The only district possessing a really high density of population is a small part of Egypt in the north-east.

NORTH AFRICA.

396. EGYPT. This country is an independent kingdom, which is at present partly under the guidance of Great Britain.

The country extends from the mouths of the Nile to Wady Halfa in about lat. 22° N. In the east it extends to the Red Sea, and includes the peninsula of Sinai; and in the west the boundary is an indefinite line passing through the great Libyan Desert. The habitable area, however, is almost confined to the tracts capable of being irrigated by the waters of the Nile. These are (1) the Nile Delta, (2) a valley varying from 2 to 15 miles in width lying between deserts on both banks of the Nile, and (3) a depressed area west of the Nile, known as the Fayum, to which the waters of the river are led by an ancient canal called the Bahr Yusuf (water of Joseph). Besides these tracts there are a few oases in the desert. Hence, though the distance in a direct line from Wady Halfa to the shore of the Mediterranean is about 680 miles, equal to the distance from the Scilly Isles to the northern extremity of the Shetland Islands, the entire area fit for cultivation is less than 10,000 square miles, or about one-half larger than Yorkshire; and on this area is crowded a population of about 14,220,000, almost wholly dependent on agriculture.

397. What enables this highly productive agriculture to be maintained is the regular annual rise of the water in the Nile,

a rise now known to be due almost entirely to the summer (monsoon) rains on the lofty mountains of Abyssinia. The river begins to rise about the 26th of June, and by the month of September it has reached the top of its banks and begins to overflow, except where restrained by artificial dykes. A normal rise at Cairo is about 25 feet; if the rise exceeds 27 feet there is danger to the embankments, and day and night these are watched by large bodies of men, ready to fortify or heighten them under the directions of engineers.

398. In Upper Egypt, that is, from the southern frontier to Aslut, in about 27° N., perennial irrigation is at present available only in parts; over the remainder the method of irrigation still practised is the old method of the Pharaohs. The river on rising is allowed to fill large enclosed basins on both sides, the water being run off again by sluices at the end of about seventy days. By this method of irrigation the soil is condemned to sterility for half the year, during which it is either under water or baked to a degree of hardness which makes it impossible to grow anything. By it, too, only such crops can be grown as ripen within a short period—beans, lupines, clover, millet, wheat, barley, onions.

399. The more valuable crops, cotton, maize, sugar-cane, require a longer period to mature, and hence in Egypt demand a system of perennial irrigation; that is, a system by which water can be supplied all the year round. This system, in which high embankments are erected to confine the river in flood, and high-banked canals to conduct the water to the irrigable basins, has been practised on a large scale only since the first half of the nineteenth century, and principally in Lower and Middle Egypt—that is, in the Delta, and the region between the Delta and Aslut.

400. The full supply of water obtainable from a normal rise of the Nile is required for the area of land already under cultivation in Egypt, and famine is threatened to a greater or less extent both when the rise is exceptionally low and when it is so high as to overtop the artificial embankments and thus destroy the crops growing under their protection. The regulation of the river thus requires the constant attention of the government. When the government of the country was under

British influence (1883-1921) the area capable of being irrigated was increased, and great dams were constructed at Aswan (Assuan) and Asiut for increasing the supply of water, and thereby extending the irrigated area still further, and improving the mode of irrigation in parts already irrigated.

401. The Nile, besides being the great means of irrigation, is of importance as a waterway. It is navigable without impediment as far as Aswan, in about lat. 24° N., the "first cataract." Since the construction of the dam mentioned in the previous paragraph this cataract is artificial, and a lock has been constructed alongside to allow of the ascent and descent of vessels. The second cataract occurs at Wady Halfa, that is, on the southern frontier, but the rapids at this cataract are navigable easily enough at high water. Above the Egyptian frontier there are many other "cataracts" and obstructions to navigation (431). The Suez Canal (22) lies entirely in Egyptian territory, and is joined by canals from Cairo and from Zagazig. The Mahmudieh Canal, about ten feet deep, connects Cairo with Alexandria, branching off from a point on the western of the two chief arms of the Nile in the Delta (the Rosetta mouth). In Lower Egypt there are numerous lines of railway (313), and one line of standard gauge (4 feet $8\frac{1}{2}$ inches) ascends the Nile to Luxor, whence a line of 3 feet 6 inches gauge runs to Aswan. From Wady Halfa another line on the same gauge now runs to El Obeid *via* Khartum (431, 446).

402. **Foreign Commerce.**—Cotton and cotton-seed make up more than four-fifths of the value of the exports of Egypt. Among others of importance are cigarettes, oil-cake, and onions. The principal import is cotton manufactures, and among those next in value are coal, wood, woollen manufactures, coffee, grain, and ready-made clothing. The United Kingdom receives about half the value of the exports, and supplies nearly one-third of the imports. In the import trade the United States, France, and Italy rank next after the United Kingdom. The bulk of the foreign commerce is concentrated at Alexandria, the ancient port at the north-western extremity of the Delta. Minor ports are Rosetta and Damietta, near the mouths of the arms of the Nile which take their names from these towns. Bars

Cairo	1,065,000	|	Alexandria	575,000
-----------------	-----------	--	----------------------	---------

obstruct the mouth of the river at both places. The capital is Cairo, at the head of the Delta. Its suburb of Bulak is a busy river-port.

403. Since the reconquest of the **Egyptian Sudan** by British and Egyptian forces in 1896-99, the whole of the upper Nile region as far as the frontier of Abyssinia and Uganda has been regarded as a joint dominion of England and Egypt. It includes river-valleys dependent like Egypt on irrigation, but higher up vast areas composed of low and in large measure swampy, forest-clad plains, with an abundant rainfall and numerous streams, producing, however, at present little except ivory and rubber. Great schemes are at present being undertaken with a view to extending the irrigable area of Egypt and the Egyptian Sudan by means of works both on the Blue and the White Nile. A dam on the Blue Nile at Sennar makes cultivation possible on 500,000 acres of the Gezira.¹ On the White Nile it is proposed to ascertain the practicability of forming a new channel for the river far in the south, where it flows through a region of swamps. At present the annual rise of the Nile in this region has hardly any effect on the volume of the river lower down. It merely leads to an annual expansion of swamps and lakes. If a new channel could be dug avoiding this region, then the rains that fall on the equatorial plains of the Nile basin would also help to swell the Nile in the lower part of its course, and thus make good the loss of water taken from the Blue Nile for irrigation. The capital of the Egyptian Sudan is Khartum, at the confluence of the White and Blue Niles. It trades principally in gum from Kordofan. See also 446.

404. **WESTERN MEDITERRANEAN STATES.**—A. The vast area, mainly desert, between Egypt and Tunis has since 1912 formed the Italian dependency of **Libia italiana**. It includes, besides Tripolitania in the west, the oases of **Fezzan** (the chief town of which is Murzuk), to the south, and the plateau of **Barka** or **Cirenaica**, with a small strip of cultivable land east of the Gulf of Sidra. Date palms flourish especially in the oases; Mediterranean fruits near the coastal high grounds. Ostrich farming is likely to become important. The navigation along the coast (700 or 800 miles in length) is dangerous on

¹ The fertile plain between the Blue and White Niles; chief crop, cotton.

account of the numerous sandbanks and the want of harbours. Tripoli is the only seaport of consequence, and is the centre of a caravan-trade across the desert of Sahara. Its only important exports of local origin are alfa or esparto grass (82) and sponges. A small trade is carried on at Bengazi, the port of Barka.

405.—B. Algeria and Tunis.—The former has been a French colony since 1830, the latter a French protectorate since 1881. Both are traversed by parallel chains of the Great and Little Atlas, but the principal cultivated area has a different relation to these mountains in the two dependencies. In Algeria the region best fitted for cultivation is a strip of lowland, or land at moderate elevation, between the coast and the Little Atlas, a strip known as the Tell; and the region between the Great and Little Atlas is a plateau producing little besides alfa grass. In Tunis the chief area of cultivation is a valley between the two chains of the Atlas, namely, the valley of the Mejerda, a river which regularly overflows its banks during the winter rains, irrigating and fertilising the neighbouring plains. The climate and products of both Algeria and Tunis are similar to those of southern Italy and southern Spain. In both wine is a product of growing importance and great promise (148). Sfax exports the olives of the Tunisian Sahel (62).

406. Since the occupation of Algeria by France much has been done for the development of the resources of the colony, though at a considerable annual cost to the mother-country. Thousands of miles of excellent roads have been made, and over 3,000 miles of railway. Harbours have been constructed. New land has been brought under cultivation by the sinking of artesian wells (10). The security now afforded is inducing an increasing number of natives (especially the Berbers or Kabyles) to change a nomadic for a settled mode of life. The region south of the Atlas, the Biled-ul-jerid, or Land of Dates, is occupied by nomadic Arabs. Far to the south the oases of Wargla and Golea also belong to Algeria. There are comparatively few European settlers in Algeria. Kabyles, Arabs, and Jews compose about six-sevenths of the population. The remaining seventh is chiefly of French, Spanish, Italian, or Maltese origin.

407. The rising exports of Algeria are iron ore, wine, wool, early potatoes (which now cover about a third of the cultivated

area, and are exported mainly to France), grapes and other fruit, tobacco, and olive oil. The leading exports of Tunis are olive oil and cereals (wheat and barley). In the exports to the United Kingdom from both Algeria and Tunis **alfa grass** takes the first place, but compare par. 82. The minerals of commercial importance are **iron ore**, obtained from the mines of Ouenza, in the east of Algeria near the port of Bona, and those of Benisaf in western Algeria (on the coast north of Tlemsen), phosphates from the south-east of Tunis (conveyed by a railway from Gafsa to the port of Sfax), and zinc ores from the north-west of Tunis.

408. The bulk of the Algerian exports go to France, those of Tunis to Italy. In spite of a preferential tariff in favour of French goods the United Kingdom still supplies a large proportion of the manufactured goods which form the chief articles of import into both regions.

409. The principal **ports** of Algeria, in the order from west to east, are Oran, Algiers, Bougie, Philippeville (the port of Constantine), and Bona. Most of the Tunisian ports have only open roadsteads for large vessels, which have consequently to load and unload with the aid of lighters. The town of Tunis itself, the most populous town either in the protectorate of Tunis or Algeria, and the chief seat of the foreign commerce of the protectorate, is situated at the end of a very shallow lagoon, but has been made accessible to large vessels by a canal 21 feet deep. Larger ships have to load and discharge in the roadstead of Goletta, "little throat," at the narrow mouth of this lagoon. Susa, Sfax, and Cables, on the east coast, are the ports chiefly frequented in the commerce with the interior of Africa, inasmuch as caravans that ascend the valley of the Mejerda are obstructed on their way southwards by the shotts, or string of shallow salt lakes to the south of the mountains.

410.—C. **Morocco** is a Mohammedan empire, which has since 1912 been recognised as a French protectorate, though the northern portion, with the exception of a small neutral zone round Tangier, is Spanish. The surface is highly mountainous. The High Atlas traverse the country from south-west to north-east, and are connected at the north-eastern extremity with a

Oran	165,000	Tunis	200,000
Algiers, with suburbs	255,000		

coast range known as Er Rif. The chief permanent rivers of the country flow through the lowlands and plains in the angle between these ranges, and in that area lie also the chief towns—Marakesh in the south, and Fez and Mekinez in the north. All of these lie at the base of the mountains, the western plains being extremely arid. South of the Atlas, the rivers, such as the Wady Draa, are temporary, containing water in their lower courses only when the snow is melting on the mountains.

411. In relation to foreign commerce Morocco can be described as little more than a country of possibilities. Large areas have a luxuriantly fertile soil, and the rivers in many places are well adapted for irrigation. These advantages are now being turned to account, and many farms have been sold at a cheap rate to European colonists, who are developing agriculture by modern methods. The fisheries (tunny, sardines, lobster, &c.) are being actively prosecuted, chiefly by French fishermen. Iron ores mined in the Rif are now being exported from Melilla in the Spanish zone. Roads suitable for motor cars have been built, and narrow gauge railways connect points on the coast with the chief towns of the interior. Many mills of European type for treatment of the raw materials of the country have been erected, and water-powers are being turned to account by electricity. In French Morocco great attention is being given to the development of the port of Casablanca, which is already connected by rail both with Fez (by way of Rabat) to the north-east, and Marakesh to the south-east. Among the minor ports, Rabat has a good river harbour, but obstructed by a bar; Saffi, only an open roadstead. The harbour of Tetuan, on a river entering the Mediterranean, requires to be cleared of sand.

412. The foreign commerce is at present characteristic of a developing country—the imports more than twice the value of the exports, betokening an excess of investment. It is chiefly with France and the United Kingdom. The chief exports are eggs, wheat and other grains, almonds, wool, linseed, and other agricultural products; but some native manufactures, such as fez caps and leather, are exported to various parts of North Africa.

Fez 110,000

TEMPERATE SOUTH AFRICA.

413. By far the greater part of this area now belongs in some way or other to the British Empire. The British area is made up of the Union of South Africa (a state established in 1910 by the union of the Cape of Good Hope, Natal, the Orange Free State, and the Transvaal, which are now provinces of the Union), together with the Bechuanaland Protectorate, Basutoland, Rhodesia, the Nyasaland Protectorate, and, since 1915, the Territory of South-West Africa (formerly German territory).¹ Pretoria is the seat of government of the Union, and Cape Town that of the supreme court of law and the legislature.

414. The **CAPE PROVINCE** includes almost all the area south of the Orange River, along with Griqualand West and the former Crown colony of British Bechuanaland. To it also belongs the whaling-station of Walvis Bay, in the South-West Territory, about one degree north of the Tropic of Capricorn. The white population is mainly of Dutch and British origin, the first settlers having come from Holland, but the bulk of the inhabitants² are for the most part Bantus (Kaffirs), who are chiefly found in the east.

415. Throughout the province there is a general rise of the surface from the coast to the interior. From the south coast the ascent is made in well-marked terraces, the innermost of which form tablelands of about 3000 feet or more in height. These tablelands are known by the Hottentot name of **karroos**. The Great Karroo, which is in most parts at least 70 miles in width, lies to the south of a series of mountain ranges which

¹ These adopted in 1903 a uniform customs tariff, under which a rebate of 25 per cent. is allowed on certain classes of goods of British origin, while goods which, under the general tariff, are subject to a duty of 2½ per cent. *ad valorem*, are, if of British origin, admitted free. These privileges were extended to British Colonies prepared to offer similar advantages in return. This tariff was considerably modified by another Conference held in 1906, and later by Acts of Legislation of the Union of South Africa. At the Commercial Congress held at Lourenço Marquez in 1919 a resolution recommending an increase to minimum of 5 per cent. was carried. The government policy has also been to bring the tariff of the South-West Protectorate into line with that of the Union. The customs tariff of 1925 was particularly designed for the promotion of South African manufacturing industries.

² At the census of 1921 the whites formed only about 24 per cent. of the total population.

traverse the interior from west to east. The edges of the tablelands and the ranges of mountains are broken by numerous gaps which have facilitated the construction of roads and railways. There is now a network of railways¹ in the eastern half of Cape Province and of British South Africa generally—that is, in the half which is on the whole most productive both in virtue of its climate and its wealth in minerals. All the main railways are on the gauge of 3 feet 6 inches. All necessarily rise to the interior by heavy gradients, amounting in several places to 1 in 35.

416. Climate.—The great drawback of the climate is drought. The eastern parts of the province, which are exposed during the southern summer to rain-bearing winds from the Indian Ocean, and the coast strips in the extreme south, are the only districts that receive plentiful supplies of rain, those of the Cape Town region falling principally in winter.

417. Products and Foreign Commerce.—Before the discovery, in 1867, of diamonds at Kimberley, Griqualand West, which is now the greatest diamond-producing centre in the world, wool was the chief export. Now diamonds are the chief export derived from the colony itself, but wool is still the leading agricultural export. Among other important exports are ostrich-feathers (from domesticated birds), copper ore (from mines in the north-west connected by a tramway with the harbour of Port Nolloth), maize, and mohair (45). The amount of this last export has risen very rapidly in recent years. In the general trade of the colony, however, gold is by far the most important, nearly all the gold of the Transvaal (77) being exported through Cape Town. The climate has been proved to be well adapted for fruit-growing and wine-production, and the government is now endeavouring to promote these industries. At present there is only a small export of wine, often exceeded in value by the import. The coal produced in the province (chiefly at Indwe, about 200 miles inland on a branch line running about 60 miles east from the railway from East London to Aliwal North on the Orange River) is of inferior quality. The chief imports are manufactured articles and minerals (17). See also 44.

¹ The railways are to be electrified.

418. Chief Towns.—Capital, Cape Town, in the south-west. Seaports: Cape Town, with extensive harbour works; Port Elizabeth, on Algoa Bay; East London, farther east. Port Elizabeth, where a new harbour was opened in 1933, is the principal port of the colony for imports, in consequence of its being situated nearer than Cape Town to the most productive agricultural, pastoral, and mining regions of South Africa. Inland towns: Grahamstown, about 30 miles inland, north-east of Port Elizabeth, Kimberley.

419. In the Transkeian Districts (including Pondoland), between the Great Kei River and Natal, the white population is very small. Here the mouth of the St. John's River forms an excellent harbour, but the geographical conditions hinder communication with a commercially productive area.

420. BECHUANALAND is a vast territory to the north of the Orange River and Griqualand West. It has a narrow strip adapted for maize and other cultures in the east, but in the west is mainly composed of the so-called Kalahari Desert, where the rainfall is very scanty, though there is much underground water, and where there is only a small and scattered population of Bushmen, living as hunters. The Bechuana natives are skilled craftsmen, smelting and working iron and copper and carving wood. The part to the south of the Molopo and Nosob rivers or water-courses, with the towns of Vryburg and Mafeking, forms part of the Cape Province. The remainder is a British Protectorate (chief town Serowe), administered from Mafeking in the Cape Province.

421. NATAL is the province lying between the Cape Province in the south and the Portuguese territory round Delagoa Bay in the north, and separated from Basutoland and the Orange Free State Province by the highest part of the Drakenberg Mountains. As its surface rises rapidly in elevation from the coast to the interior, its climate may be said to change from sub-tropical to temperate in the same direction. Near the coast are grown sugar-cane, cotton, tea, black wattle (66), and other tropical and sub-tropical products. Further inland are grown the temperate cereals and fruits, and sheep and cattle

Cape Town (with suburbs)	245,000	East London	.	.	40,000
Port Elizabeth	.	Kimberley	.	.	40,000

are reared. **Wool is the chief export**, but it is largely of external origin. Here also there is a large and rapidly increasing native population. Many Indians, originally introduced as coolie labourers in the plantations and mines, have settled in the province. The capital is Pietermaritzburg, situated at the height of about 2200 feet, in the interior. The chief seaport is Durban, a coaling station, on the natural harbour of Port Natal. From Durban a railway has been laid inland through Ladysmith, at the base of the Drakenberg Mountains, and across Van Reenen's Pass into the Orange Free State Province. This railway passes also along the base of the mountains just named to Dundee and Newcastle, coal-mining towns, and then through the northern angle of the province to join the Transvaal line from Pretoria.

422. Zululand produces excellent hides, but suffers from the want of a good seaport. St. Lucia Bay, the only important indentation on the coast, is worthless as a harbour.

423. Basutoland (not included in Union of South Africa), the **Orange Free State Province**, and the **Transvaal** occupy tablelands of from 3500 to 5000 feet or more in height, situated to the north of the Cape Province. All produce wool, hides, and grain.

424. BASUTOLAND, situated to the west and south of the **Drakenberg Range**, is the most elevated of these three divisions, having tablelands rising to 7000 feet in height. It is almost entirely inhabited by a Bantu people of Bechuana stock. Wheat, vegetables, and other crops of the temperate zone are cultivated and partly exported to the Cape Colony.

425. The ORANGE FREE STATE, annexed by the British in 1900, has the largest proportion of whites among all the colonies of British South Africa.¹ It is composed of typical veld country, rolling grassy plains seamed by deeply cut riverbeds, nearly dry in winter. It is mainly pastoral, but has a good wheat-growing district in the extreme east, the western half of the valley of the Caledon, known as the Conquered Territory.² Diamonds are mined in the south-west (Jagersfontein³ and Koffyfontein), and coal just south of the Vaal. The capital is Bloemfontein.

¹ At the census of 1921 about 31 per cent.

² Conquered from the Basutos. The Caledon River is here the boundary between Basutoland and the Orange Free State Province.

³ Mines closed down, 1932.

426. The **TRANSVAAL** was also annexed in 1900. The coloured population, partly of non-African origin, is relatively larger than in the Cape Province or the Orange Free State Province.¹ The surface features are similar to those of the latter province. Apart from mining, the products here also are mainly those of the pastoral industries. Wheat is little grown, but the agricultural products include maize (mealies), tobacco, and some other crops of warmer latitudes. The wealth of the province is, however, mainly due to its gold mines (77). The deposits first worked were those of the De Kaap field in the east, where Barberton was founded in 1885. But the chief goldfield (the most productive in the world) is that of the Rand (Witwatersrand), a ridge about 60 miles long rising about a thousand feet above the adjacent plains. Here Johannesburg was founded in 1886.² Since 1895 it has been connected by rail with all the chief ports of South Africa from Cape Town to Delagoa Bay. So rapidly has the gold industry developed here that great difficulty has been encountered in obtaining the necessary labour. In 1909 provision was made for the introduction of natives of Portuguese territory as labourers in the mines for a fixed period. Coal is mined at Boksburg, near Johannesburg, at Middelburg, and elsewhere; iron ore in the Ermelo district. The capital is Pretoria, about 35 miles north of Johannesburg.

427. **Rhodesia**, extending northwards from the eastern part of Bechuanaland to the Belgian Congo, was brought by treaty within the sphere of British influence in 1888. Most of that part of it which lies south of the Zambezi,³ even though it reaches far within the Tropic of Capricorn, may be included in temperate South Africa, inasmuch as it embraces a large extent of tableland from 4000 to 5000 feet in height, with tracts healthy for Europeans.⁴ The higher parts of the tableland are in Matabililand in the south, round the Matoppos Hills, and in Mashonaland in the north. Within this territory gold is worked

¹ At the census of 1921 the white population formed about 25 per cent. of the total.

² In 1931 the town had a white population of 205,000.

³ The river Zambezi divides Southern Rhodesia from Northern Rhodesia.

⁴ One of the finest irrigation works in South Africa has been completed on the Mazoe River in the north-east corner of Southern Rhodesia. A big dam has been built and an extensive system of subsidiary channels have been cut for the purpose of irrigating adjoining lands. The reservoir formed by the dam has an approximate area of 4 square miles and a capacity of some five thousand million gallons.

at many places. In Southern Rhodesia maize and tobacco are important crops ; ground nuts, oil-seeds, beans, and oranges are exported to Europe ; cattle-ranching is extending. Chrome ore and asbestos are valuable minerals. In 1889 the British South Africa Company received from the British Crown a charter empowering it to acquire rights of government within this region. The charter, however, expressly reserved to the Crown the right of assuming dominion, and the Company's administration ceased in 1924. The first British settlements were made in Mashonaland, on the higher tableland, where Salisbury, now the administrative centre, was founded ; after a war with the Matabili in 1894, the more southerly part of this tableland was also occupied. Southern Rhodesia was granted responsible government in 1923. The railway from Cape Town by Vryburg to Bulawayo, opened in 1897, has been connected by way of Salisbury and Umtali with the Portuguese port of Beira. A line ¹ running north-west from Bulawayo past the Wankie coalfield, which is said to contain coal little inferior to that of Cardiff, crosses the Zambezi, by a bridge 650 feet long, at the Victoria Falls, where the river, a mile wide, plunges 343 feet into a narrow gorge. North of the river the line now runs north-east through Northern Rhodesia, past the lead and zinc mines of Broken Hill, into the Belgian Congo.

428. North of the Zambezi is the British crown colony of Northern Rhodesia. The capital is Livingstone.² Maize, tobacco, and cotton are the chief crops ; copper (in the north), zinc, and lead the principal minerals. The north-western portion includes the unhealthy but very fertile district of Barotseland.³

429. The **Territory of South-West Africa**, between the Cape Province and the lat. 18° S., with the exception of Walvis Bay (414), formerly under German protection, was annexed to the Union in 1919. It has at present hardly any commercial products, but has underground stores of water, and is adapted for cattle-rearing. Swakopmund, north of Walvis Bay, has been connected by rail with Windhuk, the capital. Copper occurs at Otavi, in the north. Diamonds and ores of tin, lead, and iron occur in paying

¹ A section of the much-talked of "Cape to Cairo" line.

² A more central capital was founded (1932) near Lusaka.

³ Southern Rhodesia, 150,000 sq. m. ; pop. c. 1,000,000. Northern Rhodesia, 288,000 sq. m. ; pop. c. 1,500,000.

quantities. Very fine cotton has been grown on the route of the railway. The karakul sheep, from which "Persian" lambskins are obtained, when crossed with native sheep, thrives on the higher plateau of Damaraland and Namaqualand.

TROPICAL AFRICA.

430. General Characteristics.—This is the part of the continent that yields least to commerce, and most of it affords little prospect of yielding much more in the near future. The obstacles to commercial development are of various kinds. Vast areas are desert (the Sahara in the north, the Somali deserts in the east). Elsewhere the soil is in a large measure infertile. The climate is generally malarious, above all for Europeans. Peace is preserved only over a relatively small area. There were hardly any strong native governments except in the native Hausa states of **Sókoto**, **Gandu**, **Adamawa**, and **Bornu**, between the Lower Niger and the basin of Lake Chad. European authority was till recently mostly confined to a narrow strip of coast round the trading stations. Worse than all else, slave-dealers (Arabs and others) frequently devastated and depopulated whole regions. The means of communication are still defective. Nearly all the great rivers have their navigation interrupted by rapids and falls. There are hardly any roads, only foot-paths connecting the numerous villages. Goods are carried on the backs of animals, mostly camels or oxen, or by human porters. Over large areas (mainly in the south-east) oxen cannot live owing to the fatal bite of an insect known as the tsetse fly.

431. River Navigation.—Above the Wady Halfa four rapids obstruct the Nile navigation before Khartum (403) is reached. The railway above mentioned (401) now avoids these rapids, and in 1900 the Nile above Khartum was cleared of the *sudd* or matted floating vegetation which hindered navigation below Lake Victoria.

432. The lower half of the Senegal is navigable for gun-boats, but the upper half is obstructed by numerous difficult rapids, some impassable for the greater part of the year.

433. The unbroken navigation of the Niger basin is of much more importance than that of any other African river except

the Nile, regard being had to the situation of the most productive regions belonging to it. Vessels of 600 tons can ascend for seven or eight months in the year as high as Rabba, a little above the confluence of the Benue. There navigation is almost wholly interrupted by a long series of rapids with a fall at their head, but the **Benue**, which traverses the southern part of the Hausa States, is navigable to about 13° E., that is, for nearly the whole of its westerly course.

434. The Congo has nearly 1000 miles of uninterrupted navigation between the outlet of Stanley Pool, about 300 miles from its mouth, and Stanley Falls, situated just above the place where the river first crosses the equator, but on the 200 miles next below Stanley Pool numerous rapids and falls completely obstruct the navigation (440). The great tributaries on the left bank all have their navigation stopped in the same way between 5° and 6° S. lat. ; and the Ubangi, the chief tributary on the right bank, has difficult rapids in 4° 20' N.

435. The **Zambezi**, the only great river on the east side of the continent, not only has impassable rapids in its lower course (about the place where it turns to the south-east), but is very shallow below those rapids, and has its mouths obstructed by bars (442). The Shire, the tributary on the left bank that forms the outlet of Lake Nyasa, has its navigation interrupted by a series of rapids and cataracts in the middle part of its course, where it describes a curve to the west, and even below the rapids is too shallow for boats drawing more than about 18 inches. Below the rapids navigation begins at Chiromo, at the confluence of the Ruo.

436. Europeans have pushed their influence throughout the area. French authority prevails from the Senegal to the Niger, and the French colony of the Senegal now confines to a narrow strip the British settlements on the Gambia, with Fort Bathurst at the mouth of the river. A coast railway has been laid in French territory (from St. Louis, the capital, to Dakkar at Cape Verde), and a railway to connect the navigation of the Senegal with that of the Upper Niger has been constructed.¹ The region

¹ A far-reaching scheme for further railway construction in French West Africa will include the linking together of the railways already existing in the various colonies.

franca for a wide region. Of the towns, none of which is at a greater altitude than 2500 feet, the most important is the mud-walled city of Kano, noted for hundreds of years as the place of manufacture of cottons and fine kinds of leather (including Morocco leather), which are sold in every part of North Africa. A great variety of European goods already reach it from the Mediterranean. As many as 12,000 camel-loads are said to be brought thence annually to Kano, but that probably indicates at most about 2000 tons (19). Slavery was abolished throughout the protectorate in 1917.

437. Of the exports, **palm-oil, palm-kernels, ground-nuts, and cocoa** are the chief. Cacao plantations are being fostered by the government, and the cultivation of cotton is actively encouraged. The main trade artery, leaving the Niger out of account, is the railway from Lagos to Zaria and Kano, the capitals of the northern cotton region (705 miles). Rich alluvial deposits of tin ore are worked on the Bauchi plateau in the Northern Provinces. Coalfields at Udi in the Southern Provinces supply the tinfields as well as vessels calling at Port Harcourt. From this port a railway passes through the coal and tin areas to the Lagos-Kano line. Its extension to the fertile lands west of Lake Chad will open vast possibilities.

~ 438. **Ports.**—Lagos, the capital, on a small island within a lagoon, the entrance to which is obstructed by a shifting bar over which since 1918 vessels drawing 21 feet may pass. The new port and railway terminus of Apapa, opposite Lagos, accommodates vessels drawing 25 feet. Other ports are Burutu, on the Forcados arm of the Niger delta, Akassa, at the mouth of the main stream of the Niger, and Calabar, in the east of Southern Nigeria.

439. The coast-line under British authority or protection is followed by the **Cameroon Protectorate** (formerly German), now administered by Britain and France, and that again by **French Equatorial Africa**, extending from the coast to the Congo, and the lower part of the Ubangi. The whole of the coast south of the Congo as far as the river Kunene belongs to Portugal, and so too does a small portion to the north of the Congo. The land on the northern side of the estuary of the Congo, together with the greater part of the Congo basin, east of the Ubangi,

belongs to the Belgian Congo, a state founded by international treaty in 1885, which passed into the possession of Belgium in 1908.

440. Since 1890 the Congo has had a common import tariff with the adjoining French and Portuguese territories. Steamers are maintained by the state above and below the lower falls, and a railway to avoid the falls between Matadi and Leopoldville was opened in March 1898. The chief exports are rubber, palm-oil, palm-kernels, and ivory. The district of Katanga, now reached by the "Cape to Cairo" railway (427), and a line from Benguela, is rich in copper. The chief port is Boma.

441. The Portuguese territories, south of the Congo, comprise some of the finest land in tropical Africa. There are large districts in the north more than 5000 feet in height, and consequently with a climate almost European. The three seaports of Loanda, Benguela, and Mossamedes (the first and last with two of the finest natural harbours on the west coast) give name to three provinces. The chief exports are coffee, rubber, palm-oil (the oil-palm flourishing as far as 10° S.), ivory, and, in the south, cotton.

442. Portuguese East Africa, stretching from Delagoa Bay to Cape Delgado, is entirely surrounded by British territories. The chief seaports in this region are Lourenço Marques, at the head of Delagoa Bay, and Beira, at the mouth of the Pungwe, both of which enjoy the advantage of railway connection with the interior (426, 427). Lourenço Marques harbour is well equipped, and steamers can discharge alongside of the railway terminus; Delagoa Bay affords access to the largest vessels at all seasons. Chinde, Quilimane, and Mozambique are the ports next in importance. Chinde lies on the most advantageous arm of the delta of the Zambezi (discovered only in 1889), while the Zambezi above Chinde can be navigated only by steamers of very shallow draught.

443. The Nyasaland Protectorate, formerly British Central Africa, has been established in the region lying west of Lake Chilwa, and round the south and west shores of Lake Nyasa. Here, on the highlands between Lake Chilwa and the river Shire (435), a British company had established itself long before 1891, when the British protectorate was established, and various

experiments in cultivation have been made under British direction in this region. Tobacco, cotton, tea, coffee, and sisal products all thrive, and the tobacco is rapidly acquiring importance. The chief settlement in this region is Blantyre, to the south-west of Lake Chilwa, connected by railway with Beira; but the seat of administration is Zomba, farther north.

444. Tanganyika Territory, formerly German East Africa, administered as a British possession under mandate of the League of Nations, extends northwards from the river Rovuma to Kenya Colony. Westward it stretches to Lakes Nyasa, Tanganyika, and Victoria Nyanza, and to the Belgian Congo. There are good natural harbours for vessels up to about 16 feet draught at Dar-es-Salam and Mikindani; Bagamoyo has only an open roadstead; Tanga and the other ports have bars allowing access only to Arab dhows or other small vessels. Dar-es-Salam, the seat of administration, is the terminus of the Central Railway (780 miles), which runs through Tabora to Kigoma on Lake Tanganyika. From Tabora a line reaches Lake Victoria. Another line runs inland from Tanga. The chief exports are sisal, coffee, cotton, hides, ground-nuts, copra, and wax. **Kenya Colony**, another part of the British Commonwealth, extends northward to near the Juba river, and westward to the Belgian Congo. It thus includes the fertile district between Mounts Kenya and Kilimanjaro, and has soils and a climate well suited to sugar, coffee, and other tropical products. Mombasa, on a small island, is an old seaport, and opposite, at Port Kilindini, is a deep, capacious, easily accessible, and well-sheltered harbour, from which the Uganda Railway on the metre gauge, 584 miles long, runs by moderate gradients via Nairobi, the capital, to Kisumu, on Lake Victoria. From Nakuru, on this railway, a line has been laid into Uganda. The railway passes through much desert country, but also through healthy highlands adapted for the rearing of cattle, and the cultivation of tobacco and even European grains. The British **Uganda Protectorate**, between Lakes Victoria and Albert, at the height of about 4000 feet, cultivates cotton, coffee, rubber, millet, maize, wheat, and other cereals, sugar-cane, sisal, and citrus fruits. Horned cattle, sheep, and goats are raised. Labour is plentiful and, although requiring training and supervision, is above the average.

445. The islands of Zanzibar and Pemba, forming a British protectorate, are the chief remnants of the Arab sultanate of Zanzibar, of which the coastal strip is now the Kenya Protectorate. The trade of the town of Zanzibar is largely in the hands of merchants belonging to British India (Baniyas). Cloves, pepper, and other spices are exported from these islands.

446. The more noteworthy of the remaining ports on the east coast of Africa are on the Gulf of Aden and the Red Sea, and are either starting-points of camel caravans for the interior or places held by European powers as coaling stations. Berbera and Zeila, in **British Somaliland**, carry on a trade with the fertile oasis of Harrar (which yields coffee for export), and with Shoa to the south-east of Abyssinia. A railway, opened in 1917, from the French port of Jibuti, at the mouth of the Gulf of Tajurra, to Adis (new) Harrar, at the foot of the plateau on which the oasis lies, now reaches Adis Abeba. Assab and Massaua, with the group of islands to the east of Massaua, are in the Italian colony of **Eritrea**. Suakin formerly had a considerable trade with Berber, Khartum, and other places on the upper Nile and in the Nile basin (**403**). This region is the chief source of the gums of commerce. A railway has been laid from Port Sudan, now the principal port of the Sudan, a little to the north of Suakin, to Berber and Sennar.

447. ABYSSINIA, a country composed of lofty tablelands, in which the chief towns are situated at the height of about 6000 feet above sea-level, is at present of little value as regards European commerce, but its position between Egypt and the Sudan makes it of great political importance, and it will probably be more rapidly developed by Italy. Capital, Addis Ababa.

448. Islands.—A. In the Indian Ocean.—Mauritius (British) and **Réunion** (French), the most important of all African islands commercially. They are both covered with plantations of tropical products, of which sugar¹ is the chief, the labourers being mostly coolie immigrants (**16**). Rum, vanilla, aloe fibre, and coco-nut oil are among its other exports. The **Seychelles**, a separate British colony, exports coco-nuts and coco-nut oil, besides vanilla and tortoise shell. **Socotra**, off the eastern

¹ Mauritius annually exports over 200,000 tons of sugar, chiefly to India, Australia, the United Kingdom, and the United States.

extremity of Africa (British since 1886), is principally known in commerce for its aloes.

449. The large island of **Madagascar** exports rubber, cattle, hides, wax, and a few other products, but has a very small commerce compared with its population of over three and a half millions. Its mountainous but well-grassed and well-watered interior is admirably suited for cattle-rearing. Since 1885 the island has been a French protectorate, and since 1895 under direct French administration, which grants a preferential tariff to French goods. The capital is Antananarivo, on the interior plateau of Imérina, connected by rail with the nearest port, Tamatave. On the north-east is the fine natural harbour of Diego Suarez, and on the north-west, nearly opposite the port of Mozambique, that of Majunga. The **Comoro Islands** (French), north-west of Madagascar, furnish sugar, rice, and hides.

450. B. In the Atlantic Ocean.—The **Azores** (Portuguese), commercially next in importance to Mauritius and Réunion, furnishing oranges (St. Michael), pine-apples, &c.; **Madeira** (Portuguese), exporting wine and fruit; the **Canaries** (Spanish), exporting early vegetables and bananas to the London market; the **Cape Verde Islands** (Portuguese), with tropical and sub-tropical plantations on Santiago (on which is Porto Praya, the seat of government), and an important calling-station at St. Vincent, which, though barren, has a magnificent harbour; **St. Thomas** and **Principe** (Portuguese), in the Gulf of Guinea, with plantations of cacao, coffee, cinchona, &c.; **Ascension** and **St. Helena**, both British, now of little value commercially, but used as government coaling stations. The aërial trade from Europe to America is to be *via* the Azores.

AMERICA.

451. America, or the New World, is less than one-half of the aggregate size of the three great continents of the Old World—Europe, Asia, and Africa. Its population, numbering over 200 millions, is now mainly made up of people of European origin, the remainder being chiefly composed of native Indians, negroes (originally introduced as slaves), and people of mixed race.

NORTH AMERICA.

452. Including the West India Islands, this division of the New World comprises more than half the area, and more than two-thirds of the population belonging to the whole. The surface is made up mainly of plains and tablelands, and the great mountain chains have a more or less southerly trend. In the west, series of lofty mountains stretch through the entire length of the continent, rising from a tableland, 4000 feet or more in height, which at its widest (about lat. 40°) extends over fully one-third of the breadth of the United States and, east of the **Rocky Mountains**, slopes very gently downwards to a great plain. Towards the south, in the narrower part of the continent, the tableland stretches almost from sea to sea.

453. The general correspondence between the climate of the west of North America and that of western Europe, and between the climate of the eastern side of the continent and that of eastern Asia, has been referred to in the paragraphs relating to climate generally.¹ Important climatic effects are due to the direction of the mountain chains. The western mountains, shutting off the moisture from the Pacific (9), cause a large part of the interior of the United States to be too dry for agriculture without irrigation. Further, the open plains and gently rising ground to the east of these mountains allow even the most southerly points of the United States, as well as the east coast of Mexico, to be swept from time to time by keen winds from the north. Even in the extreme south of Texas, in 26° N., the temperature has been known to fall as low as fourteen degrees below the freezing-point.

COUNTRIES OF NORTH AMERICA.**GREENLAND.**

454. Greenland is a large mass of land, or group of islands (it is uncertain which), almost wholly buried under ice. The few settlements on the west coast, inhabited chiefly by Eskimo

¹ See also the diagrams of rainfall and temperature given under Canada in the "Handbook of Commercial Geography," by Chisholm and Stamp (twelfth edition, Longmans).

under Danish rule, are of no importance in commerce, except as being sometimes visited by whalers, and as a source of cryolite, a mineral used in the extraction of aluminium.

BRITISH NORTH AMERICA.

455.—A. THE DOMINION OF CANADA is situated to the north of the United States, from which it is separated partly by the middle line of Lakes Superior, Huron, Erie, and Ontario, partly (west of the Lake of the Woods) by the parallel of 49° N. The inhabitants are mainly of British origin and Protestant in religion; but French Roman Catholics make up about one-third of the population, chiefly in Quebec (**473**), where the first colonists were French. There are about 120,000 Indians, most of whom are hunters, roaming over the forest regions of the north-west, and living by the sale of furs to the fur-trading companies. The more populous portion of the vast territory of the Canadian Dominion is confined to the region south of the St. Lawrence, west of the city of Quebec, and the land on the north adjacent to that river and the great lakes from Quebec to the south-eastern shore of Lake Huron. Elsewhere the density of the population is almost everywhere under twenty-five to the square mile. The islands of the Arctic Archipelago are of interest in the history of commerce, from the fact that a north-west passage to eastern Asia was sought for centuries in vain among the channels that separate them. A passage was at last effected by MacLure in 1850–53, but the route is too encumbered by ice to be of any use commercially.

456. The Dominion, formed in 1867 by the union of separate colonies, has a general government and parliament for the common affairs, but it comprises nine provinces with separate parliaments, empowered to deal with matters of local concern. These provinces are in order from east to west, Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. In addition to these there is a vast territory on both sides of Hudson's Bay, not yet so organised. The seat of the general government is Ottawa, in the province of Ontario (**474**).

457. The surface east of the Rocky Mountains is made up principally of plains and undulating lowlands. In the north there lies a vast area incapable of cultivation, in which mosses and lichens form almost the only vegetation (comp. 234, 293). This area on the east of Hudson's Bay descends as low as $56\frac{1}{2}^{\circ}$ N. There next follows a region of vast forests, chiefly of pines and firs, a region that embraces the whole of the Dominion east of Lake Winnipeg, except the moss-grown area and the limited portions cleared for agriculture. In the west of the Dominion this region is succeeded to the south by open grassy prairies with little or no timber. Between the Rocky Mountains and Lake Athabasca the area of open and almost treeless prairies extends to about 59° N.—700 miles north of the United States frontier.

458. With regard to the internal communications of the Canadian Dominion, it is noteworthy, in the first place, that the St. Lawrence river and the great lakes, Superior, Huron, Erie, and Ontario, supplemented by a number of short canals (the longest is about twenty-seven miles), form a highly important system of internal navigation. The first of these canals to be constructed was the Lachine¹ Canal immediately above Montreal, opened in 1825, and other canals between Montreal and Lake Ontario were completed by 1843. The Welland Canal,² which runs parallel to the Niagara River and avoids the Falls of Niagara between Lakes Erie and Ontario, and is the longest, was constructed in 1824–29. It has a total rise of $326\frac{3}{4}$ feet. The shortest, but perhaps the most important, is the Sault Ste. Marie ("Soo") Canal between Lakes Superior and Huron, which was constructed between 1889 and 1895.³ It is little more than a mile in length, and has only one lock, measuring 900 by 60 feet, with a depth on the sill of 20·3 feet at the lowest known water-level. Since 1899 all the other canals on the route have had a minimum depth of 14 feet.⁴

¹ The village from which this canal takes its name was so called (ironically) because the French explorer La Salle was compelled by an accident to turn back at this point when seeking for a way to China by this route in 1686.

² This canal has been reconstructed to take vessels of 15,000 tons.

³ Since 1855 there has been a canal on the United States side at this place. The traffic through these short canals is much greater than that through the Suez Canal.

⁴ A 27-feet deep waterway from the ocean to the Great Lakes is to be made (p. 184 *n.*).

In 1903 they were all made free from tolls. To this great navigation route there is only one drawback. It is closed by ice for a shorter or longer period every year. It is usually open from about the end of April or the beginning of May to near the end of November, or even the first week in December.

459. Besides this leading highway for ships, the Canadian Dominion has other less important inland waterways. The river Ottawa, a tributary on the left bank of the St. Lawrence, is continuously navigable, with the aid of a few canals, as far as the city of Ottawa; and from thence there is a navigable connection by the Rideau River and canal with Kingston on Lake Ontario.¹

460. Above Lake Superior, navigation can be continued with few breaks by Rainy Lake and river, Winnipeg Lake and river, and the North Saskatchewan River to near the base of the Rocky Mountains. Steamers can ascend the last-mentioned river as high as Edmonton. The Assiniboine and Red River, which both belong, like the Saskatchewan, to the basin of Lake Winnipeg, are likewise navigable streams, but the Nelson, the outlet of Lake Winnipeg to Hudson's Bay, is too much obstructed by rapids to be of great service as a waterway.

461. In the more populous parts of the Dominion there is a tolerably complete network of railways, and since November 1885, when the Canadian Pacific Railway was completed, there has been uninterrupted railway communication from ocean to ocean within Dominion territory. Of the two other trans-continental railways (now forming the Canadian National Railways), the Grand Trunk Pacific was completed in 1914, and the Canadian Northern in 1915. See pars. 659, 662, and 663.

462. Of the other Canadian railways already completed, two are of special importance. One is the Grand Trunk Railway, the main line of which connects Montreal on the one side with the south-west of the peninsula between Lakes Huron and

¹ Two proposals for the improvement of the navigation of the St. Lawrence-Great Lakes route have been made: (1) the Georgian Bay Canal, to connect Georgian Bay, Lake Huron, by the French River and Lake Nipissing with the river Ottawa and Montreal (total length 425 miles, of which only 44 miles would be entirely artificial); (2) to deepen the St. Lawrence between Montreal and Kingston (46 miles) in order to open the Great Lakes to the sea for large ocean vessels. (*cf.* p. 183 *n.* 4).

Erie, there communicating with the shortest line in the United States to Chicago, the great lake-port at the head of Lake Michigan, and on the other side, after crossing the St. Lawrence by a bridge nearly two miles in length (including approaches), proceeds to the United States seaport of Portland (Maine). The other is the line which connects the Canadian Pacific Railway with Minneapolis in the United States by way of Sault Ste. Marie, and thus affords the shortest route from one of the most important wheat and timber regions of the United States, not only to the eastern seaports of Montreal and Quebec, but also to the north-east of the United States, including the port of New York. A railway from Sault Ste. Marie to Duluth was completed in 1888.

463. A railway from the rapidly developing grain-growing prairie provinces (**476, 477**) has been laid to Churchill, on Hudson's Bay, at the mouth of the Churchill River. The importance of this railway arises from the fact that it is part of the shortest route for the products of the north-west to England, but its value depends in a great measure on the navigability of Hudson's Bay and Hudson's Strait. The difficulties of navigation are almost confined to the strait, which is 500 miles in length, and for the greater part of the year is obstructed by ice. There is every reason to believe, however, that for at least two or three months every year, and probably for steamers of suitable build considerably longer, this route would be available (*cf.* **659-664**).

464. On the railways of Canada and the United States four time-standards are in use in different sections. They are known as Pacific, Mountain, Central, and Eastern time, and are based on the meridians of 120° , 105° , 90° , and 75° W. respectively, so that when it is noon at Greenwich it is 4, 5, 6, and 7 A.M. in the different sections in the order in which they are named (**27**). At Halifax, Nova Scotia, standard time is that of 60° W.

465. Climate.—East of the Coast Range on the Pacific side of the Dominion the climate is everywhere one of extremes. Cold but dry winters are followed by warm summers. Heavy falls of snow in winter (snow lying on the ground to a depth of two or three feet) prevail in all parts, but the snowfall is heavier in the eastern provinces than in the north-west. The north-western plains have on the whole an excellent climate as well

as an excellent soil for wheat. The total rainfall of the year (including the snow reckoned in inches of rain) is indeed scanty ; but it occurs chiefly when most required, namely, in summer, and, above all, early summer. Moreover, the moisture frozen underground always serves to start the crop in spring. Besides occasional droughts the chief drawback of the climate is a liability to early frosts. Hail and thunderstorms accompanied by excessive rains also do damage at times, but the risk of loss from these causes is not great.

466. Minerals.—The mineral resources of the Dominion are very great, but in the meantime the mines and quarries in operation furnish products chiefly for home consumption. The minerals of most importance commercially at present, or likely to be so in the immediate future, are coal (in the three forms of lignite, bituminous coal, and anthracite), copper, nickel, gold, silver, and iron. The coalfields are enormous in extent, though as yet worked only where there are special facilities for commerce, as in the neighbourhood of seaports (in the north of Nova Scotia, and in Vancouver Island, British Columbia), and at various points on or near the route of the Pacific Railway, a region in which it is very abundant. The British Columbia coal is important as the only good coal as yet worked on the Pacific coast. Alberta contains large coalfields (477) and in British Columbia one of the most extensive deposits of coal in the world is being worked to the west of Crow's Nest Pass, along a branch of the Canadian Pacific Railway (663). There being no coal in the more populous part of the Dominion (455), supplies are imported from the United States. On the other hand, there is a considerable export of Canadian coal from both sides of the Dominion to neighbouring parts of the United States. Gold is chiefly produced in the district to the north of the Great Lakes in Ontario, British Columbia, and the Yukon. Iron ores occur in Nova Scotia, Ontario, British Columbia, and elsewhere. Sudbury, in the west of Ontario, has very productive mines of nickel and copper. Elsewhere copper is mined chiefly in British Columbia. Much asbestos is mined round Thetford in Quebec province. Petroleum is produced in Alberta and Ontario.

467. The chief manufacturing industries in Canada are those which consist in subjecting the raw materials of the country to

the simplest processes, preparatory to sending the products to a home or foreign market. Flour-milling, saw-milling, the manufacture of wood pulp and various articles made of wood, the making of boots and shoes, are among the most important; but lately, under the encouragement of protective duties, the manufacture of cottons and woollens and of agricultural implements has been growing rapidly. The iron and steel industries were at first encouraged by bounties, but these ceased in 1910. Pig iron and steel production have greatly increased since the Great War.

468. Foreign Commerce.—Wheat and wheat flour make up over one-fifth of the value of Canadian exports, and among others of importance are timber, cheese, living animals, bacon and hams, and fish. Iron manufactures of all kinds and woollen goods make up nearly one-fifth of the value of the imports, and the imports of considerable value include coal and coke, cottons and other manufactures, sugar, tea, and other colonial wares. The great bulk of the foreign trade of Canada, both import and export, is carried on with the United Kingdom and the United States, the United Kingdom taking nearly half of the value of the exports, and the United States supplying about three-fifths of the imports.

469. Under an Act of 1897 British goods and the goods of the West Indies, and any other British colony which has a customs tariff on the whole as favourable to Canada as that of Canada is to it, have enjoyed since August 1, 1898, a preferential tariff. At first an abatement of 25 per cent. was allowed, then from July 1900, one of $33\frac{1}{3}$ per cent. Specific abatements on different British goods followed the Imperial Economic Conference held in Ottawa, 1932.

470. Provinces and Towns.—(1) **Nova Scotia**, a province including both the peninsula of that name and the island of Cape Breton to the north: in all about two-thirds of the size of Scotland. The fertile land, less than half the entire area, is mainly situated in the interior. The valley of Annapolis is the most favoured district in respect of soil and climate, and is above all noted for its **apple orchards**. The fisheries of this province furnish the bulk of the Canadian export of fish. The capital, Halifax, on the east coast, is situated on a fine

natural harbour, which, being in most years free from ice all the winter through, makes Halifax the chief winter port of the Dominion. It is the principal naval station of British North America. British troops were quartered here till the 1st of September 1905. The city and harbour are defended by fortifications. Important iron and steel works have been established at Sydney on Cape Breton Island, the ore being obtained from Newfoundland, while smelting coal and limestone for flux are obtained in any amount at Sydney itself.

471. (2) Prince Edward Island, about the size of the county of Norfolk, in the Bay of the Gulf of St. Lawrence between New Brunswick and Nova Scotia. From the nearest point of New Brunswick it is distant 9 miles. Fox-farming is an important industry. Capital, Charlottetown, on a large, deep, and well-sheltered harbour.

472. (3) New Brunswick, rather less than Scotland in size, very rich in forests, and also possessing valuable fisheries. The capital is Fredericton, a small town at the head of the navigation for steamers on the St. John River, but the largest town and chief seaport is St. John, occupying a fine harbour on the Bay of Fundy at the mouth of that river. The harbour is open all the year round, and since 1895 has carried on a large export trade to Liverpool in living animals, dairy produce, &c.

473. (4) Quebec, on both sides of the St. Lawrence, mostly east of the Ottawa, a province about eight times the size of Great Britain, but the population of which is mainly confined to the small area above indicated (455). The winter is long, but the summer is warm enough to grow not merely the ordinary crops of the British Isles, but also maize and tobacco. The majority of the inhabitants of the province are of French origin, and, unlike the people of France, are increasing in numbers with great rapidity. The capital of the province is Quebec, at the confluence of the Charles River with the St. Lawrence, and now the lowest point at which the river is bridged. Montreal stands on an island in the St. Lawrence, 180 miles above Quebec, at the head of ordinary ocean navigation on the river. Since the deepening of the river above Quebec the ship-channel, which has a minimum width of 300 feet, has a depth of 30 feet at ordinary low water. Montreal is now consequently the chief

seat of commerce in the Dominion and, unlike Quebec, rapidly increasing in population.¹

474. (5) Ontario, about $4\frac{1}{2}$ times the size of Great Britain, is the province to the west of Quebec, extending along the north of the great lakes. The populous region, which is the most southerly part of the whole of the Dominion, has a much shorter winter than that of Quebec. The province produces about one-half of the milk, cheese, butter, and casein of Canada. There are extensive forests. The south shore of Lake Ontario, between Hamilton and the river Niagara, is one long succession of vineyards and orchards, growing peaches and other soft fruits, and is hence known as "the garden of Canada."

475. The capital is Toronto,² near the west end of Lake Ontario, on which it has a fine harbour. The harbour fixed the precise site of the town, but the rapid growth of its commerce and industry has been chiefly due to railway traffic. The town lies where the railway following the river and lake from Montreal upwards begins to branch in many directions through the lake peninsula. Agricultural implements are among the chief manufactures. Another thriving town is Hamilton,³ at the extreme west of the same lake, with ironworks and other manufactures. The chief inland town is London. As to Kingston, see **459**. Port Arthur and Fort William are two shipping points for grain at the west end of Lake Superior, Fort William being the chief, as it is the first point reached on the lake by grain brought from the west. Here accordingly the wheat stores ("elevators") have a greater aggregate capacity than anywhere else in Canada. Ottawa,⁴ the seat of the Dominion government, stands on the river of the same name, about ninety miles above its confluence with the St. Lawrence. It is an important centre of the lumber trade. Gold is mined on the plateau north of Lake Huron.

476. (6) Manitoba, the rich, flat wheat-growing province (**465**) in the centre, is nearly three times the size of Great Britain.

¹ Population in round numbers of Quebec and Montreal :—

	1861.	1891.	1911.	1921.	1931.
Quebec . . .	60,000	63,000	78,000	95,000	130,000
Montreal . . .	90,000	215,000	470,000	620,000	810,000

² Population in 1881, under 100,000; 1901, 208,000; 1931, 630,000.

³ Pop., 155,000.

⁴ Pop., 125,000.

It encloses the lake of the same name, and the greater parts of Lakes Winnipeg and Winnipegosis. The capital is Winnipeg,¹ situated at the confluence of two navigable rivers, the Red River, which flows northwards from the United States through one of the richest wheat valleys in the world, and the Assiniboine, which comes from the west.² Comp. paragraph 99.

477. The two provinces of Saskatchewan and Alberta, situated between Manitoba and the Rocky Mountains, were created in 1905. (7) Saskatchewan is mainly a wheat-growing province,³ especially in the south-east. Flax is grown for the linen factories, and manufactures are increasing. Its capital is Regina, from which a branch railway runs north to Prince Albert on the Saskatchewan River. (8) Alberta originally owed its settlement to the advantages for cattle-ranching offered by the natural pastures to the east of the Rocky Mountains, but is rapidly attracting agricultural settlers, who grow more wheat, including winter wheat, than oats.⁴ In the south sugar-beet is grown under irrigation. The capital is Edmonton, at the head of steamer navigation on the Saskatchewan, and at a point to which railways are giving increased importance. Coal is mined in this province near Edmonton, at Anthracite and Canmore west of Calgary, round Lethbridge to the south of Calgary, and near the Crow's Nest Pass. In this province, round Banff, is the Rocky Mountains Park, with numerous hot springs and natural beauties.

478. (9) British Columbia is made up of the mountainous area situated mainly to the west of the Rocky Mountains, with the moist, mild strip of coast and the islands to the west. The principal wealth of this province consists in its minerals, forests, and fisheries. The discovery of gold first brought a rush of settlers here in 1856. Gold, silver, and copper are all mined in the extreme south (at Rossland, Nelson, &c.); copper also

¹ Pop. in 1871, 200; in 1901, 42,000; in 1931, 220,000.

² Area under wheat in 1881, 51,000 acres; in 1905, 2,844,000 acres; in 1930, 2,470,000 acres.

³ Area under wheat in 1898, 276,000 acres; in 1906, 1,332,000 acres; in 1911, 5,232,000 acres; in 1930, 14,326,000 acres.

⁴ In 1898, area in oats, 39,000 acres, wheat, 31,000 acres; in 1930, oats, 2,165,000 acres, wheat, 7,164,000 acres, of which 85,000 winter wheat. The total area in wheat in Canada increased from 6,610,000 acres in 1908 to 24,897,000 acres in 1930.

on Texada Island in the Straits of Georgia, between Vancouver Island and the mainland; coal at Nanaimo on Vancouver Island. Coal from the coalfield near the Crow's Nest Pass (466) is made into coke at Fernie for use in the smelters in the metal mining districts farther west. Fruit and dairy farming are carried on in the rich interior valleys, especially that of Okanagan. The forests of the Coast Range, composed of gigantic pine and fir trees, are among the grandest in the world. See also 73. The capital is Victoria, on a beautiful harbour at the south-east end of Vancouver Island. It has a considerable *entrepôt* trade with ports of Canada and the United States, reached by the Straits of Juan de Fuca, on the one hand, and with those of the Pacific islands and eastern Asia on the other hand. Vancouver, which has excellent harbour accommodation at the mouth of Burrard Inlet, and New Westminster, near the mouth of the Fraser River, are western termini of transcontinental railways. Vancouver exports prairie wheat to Europe by the Panama Canal, and has regular mail steamship service to Australasia and the Far East. Prince Rupert, the new port on Kai-En Island, near 55° N., is the terminus of the Grand Trunk Pacific Railway.

479. **Northern Canada.**—The remainder of the Dominion is divided into the districts of Keewatin, and Mackenzie, and the territory of the Yukon. They all yield furs, and the Yukon territory contains the Klondyke goldfield with Dawson City. The goldfield is difficult of access, but not so difficult now that a railway leads from Skagway over the White Pass to a navigable river of the Yukon basin.¹

480.—**B. NEWFOUNDLAND**, a British colony to which belongs not only the island of that name, but also the dreary coast of **Labrador**. The island is about one-fourth larger than Ireland, but it contains at present only a small population, mostly fishermen, settled on the coast. They carry on chiefly cod-fisheries on the shallow known as the Grand Banks of Newfoundland to the south of the island, and off the coast of Labrador. Blubber-seals are caught in the Gulf of St. Lawrence. The only exports of importance are dried cod-fish,

¹ Value of gold produced in the Yukon district in 1896, about £80,000; in 1900, £4,450,000 (the highest yield down to 1904); in 1931, £130,000.

train-oil, blubber, and iron ore. The iron ore, of excellent quality, is quarried on a small island called Bell Island in Conception Bay. Capital, **St. John's**, on the east coast, from which a railway traverses the island. There are large paper and pulp mills at Grand Falls. (See 25.) The small island of **Miquelon**, south of Newfoundland, belongs to the French, and is the centre of the French fisheries in these waters. French fishermen have the right by treaty to catch fish on part of the coast of Newfoundland, and to dry them on the land, but are not allowed to form permanent settlements there.

481.—C. THE BERMUDAS, a group of small islands about 750 miles to the south of Nova Scotia, producing sub-tropical and temperate fruits and early vegetables, and frequented by invalids for the sake of their equable climate.

UNITED STATES.

482. The United States form a great republic, made up of forty-eight states and two territories—the outlying district of Alaska, north-west of the Canadian Dominion, and the Hawaiian Archipelago. The “states” are smaller republics with regard to local affairs.

- **483.** The territory of the United States, exclusive of Alaska (511), extends over an area of about three millions of square miles, or more than thirty-three times the area of Great Britain. All but a small fraction of the population of the United States is of non-American origin, being composed mainly of immigrants or descendants of immigrants from Europe, or of descendants of African negroes originally introduced as slaves (**16, 491B**). The negro population (12,000,000) is multiplying slowly. The native Indians number less than 355,000. There are about 140,000 Japanese and about 75,000 Chinese, but the further immigration of all foreign peoples is strictly limited by law.

484. Surface.—The extension of the authority of the United States over the whole of the territory now belonging to them has been gradual, and has been favoured to some extent by geographical conditions. The central region of this territory is one great plain communicating freely with other plains and lowlands east and south of the Appalachian Mountains (487), and

in the west sloping imperceptibly up to the tableland which forms the base of the Rocky Mountains (452). This great central plain is traversed by some of the grandest navigable rivers in the world.

485. River Navigation.—The Mississippi is continuously navigable for steamers of considerable size to the rapids below the Falls of St. Anthony, on the parallel of 45° ; that is, to within four degrees of the northern frontier. It traverses a region in which the products of temperate and tropical climates are brought closer together than in any other part of the world, and, before the introduction of railways, formed the principal channel of communication between districts with the diverse wants due to diversity of production. Even yet, it need scarcely be added, it is of high importance as an auxiliary and rival means of communication. "During the navigation season of eight months more freight is floated on the upper Mississippi [St. Louis to the rapids] than any of the three great trunk lines of railroad carry in a year, and at about one-third the rate."

486. The Ohio, the tributary which joins the Mississippi on the left bank from a populous region in the north-east, is navigable, with only one interruption, for large steamers for six or eight months in the year, as high as Pittsburgh (in about the same latitude as New York), where the river is formed by the union of two other navigable streams. The one interruption referred to is in the form of rapids, avoided by a short canal at Louisville, and for small steamers these rapids are not insurmountable. The Cumberland and the Tennessee, on the left of the Ohio, and the Wabash on the right, have likewise considerable stretches of navigable water. The Red River, the Arkansas, and the Missouri, the great right bank tributaries of the Mississippi, are also all navigable for hundreds of miles, the Missouri for more than two thousand miles, steamers being able to ascend it uninterruptedly to the Great Falls, about a hundred miles below the gorge known as the Gate of the Rocky Mountains. In the same great plain, but outside of the basin of the Mississippi, the Red River of the North, which flows northwards into Canada, is navigable for steamers to Fargo, a point about two hundred miles in a direct line from the limit of continuous navigation on the Mississippi.

487. The Appalachian Mountains in the east, and the Rocky Mountains and other chains in the west, form an interruption to communication in this, among other ways, that they cause the rivers which cross them to have their navigation interrupted by rapids. It is partly on this account, partly on account of their smaller size, that the rivers of the Atlantic coast are of less importance than those of the great plain as navigable streams; but it must be remembered that some of them (the Hudson, Delaware, Susquehanna, Potomac, and James River) are of great value to commerce, as forming, like the rivers of the British Isles, fine harbours in their estuaries; and even the upper navigation of the Hudson, a broad, deep river, navigable for large steamers to the latitude of the Catskill Mountains, for smaller ones to the falls at Troy, is of great importance, all the more because it has the greatest of all American seaports (New York) at its mouth.

488. The Columbia River, the principal navigable stream belonging to the Pacific drainage of the United States, has its navigation frequently interrupted by falls and rapids, and so too has its chief United States tributary, the Snake River. On the main stream the lowest interruption of this nature is the Cascades, 165 miles from the mouth, but costly works enable navigation to be continued past this obstruction.

489. The obstacles presented to the laying of railways by the great mountain chains in the east and west are less, perhaps, than might have been expected from the extent and height of the mountains. The gradual slope of the ground up to the base of the Rocky Mountains has facilitated the laying of railways to the foot of the passes, and several routes have been discovered along which railways could be advantageously laid across these and other western mountains. The Californian valley, physically the most isolated of all the more productive regions of the United States, is now connected by rail with the rest of the country by lines laid across the mountains on the north, east, and south. Eastwards runs the line belonging to the Union and Central Pacific Railroads, a line completed on May 10, 1869, when railway connection between New York and San Francisco was thus established for the first time. Northwards a line of railway (completed in 1887) connects the Californian valley with

the termini of the Northern Pacific Railroad (Portland on the Willamette, the chief seaport of the Columbia basin, and Tacoma on Puget Sound). Southwards runs the Southern Pacific Railroad, which directly unites San Francisco and New Orleans, and on the one side has a connection with another railway or series of railways leading across the Rocky Mountains to St. Louis, the great port on the middle Mississippi, on the other side connections with Mexico. See also 462 and 464.

490. In the case of the Appalachian Mountains (this name being now used as a general term for all the mountain ranges in the east), it is an important physical feature of the United States that in the north-east, precisely where population is densest, mineral wealth most abundant, the connections between east and west most important, this system breaks up into a great number of smaller mountain ranges with many gaps between them, facilitating railway and canal construction. To this region belong several of the most important canals of the United States. The most important of all is the Erie Canal, which serves to connect the navigation of the great lakes with New York, starting from Buffalo, at the eastern end of Lake Erie, and proceeding eastwards to Troy on the Hudson. It was enlarged to accommodate barges of 1000 tons in 1918.

491. With regard to its climate and productions the territory of the United States may be divided into four regions, two east and two west of the meridian of 100° W.

A. The North-east.—North of the Ohio and Delaware Bay, comprising, among others, the New England States. In this region the inhabitants are almost all of European origin, and the products are similar to those of Europe. The eastern portion of it is the most densely peopled part of the United States, and that in which manufacturing industries are most highly developed. The western part contains maize and wheat lands.

B. The South-east, a region in which tobacco and cotton are grown as staples, and in which negroes form a large proportion of the population, even outnumbering the people of European descent in the states on both sides of the lower Mississippi. The rainfall of this region, at least in the south-east, is much heavier than in the former, and occurs

mainly in summer, the prevailing winds having something of a monsoon character (9).

C. The region between 100° and 120° W. (mostly tableland), comprising an area of about 1,200,000 square miles, may be described as the **arid region of the United States**, inasmuch as throughout its extent, except in the neighbourhood of mountains (9) and near the northern frontier, the rainfall is too scanty for agriculture without irrigation. This region is, however, rich in metals.

D. The Pacific Coast.—In this section of the United States the climate is very moist on the mountain slopes, especially in the north, but on the plains is comparatively dry, and south of about 40° N. it resembles that of the Mediterranean region, the summer nearly rainless, the winter mild. Gold, which first attracted a large population to this part of the world, is still an important product; but the fine Californian valley, watered by the Sacramento in the north and the San Joaquin in the south, now teems with wheat, barley, wine, tobacco, hops, and southern fruits (39). Excellent wheat is also grown on both sides of the Columbia River. On the mountains the forest scenery is highly remarkable. Dense forests of giant conifers cover the slopes, and a great timber trade has grown up round Puget Sound (Washington), at Seattle, Tacoma, and other ports.

492. Agricultural Products.—The chief crops of the United States in the order of their importance, with respect to the extent of ground they occupy, are maize (known in the United States as "corn"), wheat, cotton, oats, barley, rye, buckwheat, tobacco. Of late years the area under wheat has been stationary or declining in the states east of the Mississippi, but rapidly extending in Minnesota and North Dakota (the states which share with the Canadian province of Manitoba (476) in the Red River Valley), California, and other states west of the Mississippi. The extent of land now occupied by maize is nearly twice as great as that under wheat, and its produce is about five times as much as that of the latter. The much smaller export of maize than of wheat is due to the fact that the bulk of the former crop is employed in the United States in feeding swine and other animals, so that the export of bacon, hams, and

lard (503), as well as maize, may all be regarded as representing this branch of American agriculture.

493. The living animals exported from the United States are chiefly cattle (44), and these, as well as cheese, are mainly the produce of the states east of the Mississippi, and near the northern frontier west of that river. It is in these regions that this branch of agriculture is most rapidly developing. It is in the western states and territories, however, that sheep are multiplying most rapidly, the drier climate there prevailing being favourable to the rearing of that animal (45).

494. With regard to the agricultural deficiencies of the United States, which have to be made good by imports, attention may be drawn to two, sugar and fruits. Sugar has held the first place among the imports of the United States for many years. The cultivation of sugar-cane is almost confined to the south of one state, Louisiana. Though sugar-beet (41) thrives in many places, and sugar is now being made from it to a limited extent in the United States, it cannot generally be made so cheaply as to compete with sugar of this origin made on the continent of Europe. The ordinary fruits of the colder temperate climates flourish in the United States as well as in any part of the world, and are produced in sufficient abundance to leave a surplus for export. The imported fruits are mostly those of the Mediterranean region, oranges, figs, grapes, currants, raisins, &c.; and of the first mentioned of these, a large supply is home grown in irrigated fields in California. This state now produces the raisin-grape also, and raisins are made there. A great deal of rice is grown in the swamps of Louisiana and other south-eastern states, but rice is largely imported, chiefly by the Pacific states, where it is no doubt principally consumed by the Chinese population (483).

495. The wood export of the United States takes place from Puget Sound (491 D), Pensacola, New York, and various other ports. Pensacola, 55 miles east by south of Mobile, is the chief place of export of pitch-pine from the "pine-barrens" of Florida and the neighbouring states.

496. Minerals.—Coal (74) is produced both in the form of anthracite and bituminous coal, as well as lignite. Of both the principal forms of coal, the chief producing state is

Pennsylvania, which yields 60 per cent., or more, of the total quantity produced in the country. Anthracite is produced in several small fields in the east of the state, the centre of the region of production being about 200 miles from New York and 125 miles from Philadelphia, with both of which great cities the producing region is connected both by rail and water (canal or river). Ordinary bituminous coal is produced chiefly in the west of the state round Pittsburgh, but this coal-yielding region extends into the neighbouring parts of Ohio. Farther west another productive coal region extends from the west of Indiana through Illinois to the eastern half of Iowa. Illinois ranks next after Pennsylvania as a coal-producing state. Among the Appalachian ranges in eastern Kentucky and Tennessee and northern Alabama are other coalfields with a rising production.

497. The **iron ores** of the United States are likewise very abundant and very widely distributed. The chief region of production is south and west of Lake Superior, Duluth in Minnesota being a lake-port noted for its trade in this commodity. The ores of this region are not only very abundant, but easily worked, fairly rich in iron, and much of it of such quality as to be well suited for the making of steel on a large scale by modern processes. Other districts noted for their iron ores are the east of Pennsylvania and north of New Jersey, districts in New York to the west of Lake Champlain, the south-east of Missouri, and the north of Alabama. The great **smelting centres** and seats of production of rolled iron and the larger iron manufactures are on the coalfields. Pittsburgh takes the lead, but the industry is also very important in eastern Pennsylvania. Ohio is the state that ranks next in this respect, and the third is Illinois, which has large coalfields in the south-west within easy reach of the ores of Missouri. In northern Alabama, where coal, iron ore, and limestone abound, the industry is growing very rapidly. See 75.

498. The **precious metals** (77) of the United States are chiefly produced among the mountains in the west; gold principally on the Californian side of the Sierra Nevada, and in Colorado (at Cripple Creek, about the middle of the state, and elsewhere); silver principally in the Rocky Mountains, in the

states of Colorado and Montana (in which latter mines of remarkable richness have long been worked at Butte), and on the eastern side of the Sierra Nevada, in the state that takes its name from that range. **Quicksilver** (79) is produced very abundantly at New Almaden, near San Francisco.

499. Petroleum (76) is produced chiefly in Oklahoma, California, and Texas. There is considerable production also in Kansas and Louisiana, and supplies are obtained from several other states. The oil is conveyed in pipes from the places of production to Pittsburgh, New York, Buffalo, and other large towns. **Natural gas** occurs abundantly in western Pennsylvania and a belt extending thence westwards through Ohio, about fifty or sixty miles to the south of the west end of Lake Erie, and Indiana. The **copper** production (78) of the peninsula of Keweenaw, which juts north-eastwards into Lake Superior (state of Michigan), formerly made up at least 60 per cent. of the whole production of the United States, but at a later date great quantities of copper ore have been produced likewise in the south-east of Arizona, and, still more recently, Butte, Montana, has become the centre of the greatest copper-mining district in the world. The chief centre of **lead** production (78) is Leadville, among the Rocky Mountains in Colorado, a town which likewise produces large quantities of gold and silver. Illinois and Kansas have the chief **zinc** mines (78).

500. There is only one metal of importance in which the United States are almost entirely deficient, and that is **tin** (78). Tin ores indeed exist among the Black Hills (Harney Peak), in South Dakota, but in small quantity. Hence there is a large **import of tin** for the manufacture of tin-plate, which is much used in making packing-cases for American products of agriculture, &c. There is still also a considerable import of tin-plate, but this has declined very greatly since 1890, owing to the rapid growth of the native manufacture under the protection of a high duty.

501. Manufactures.—With regard to these, it is noteworthy, in the first place, that they are to a large extent carried on with the aid of **water-power**, and the application of electricity in making use of this source of power at Niagara and in many other places is advancing rapidly. The use of coal,

however, is increasing with still greater rapidity. The table at paragraph 74 shows that in the last year of the nineteenth century the United States was already ahead of the United Kingdom in coal production, and it is increasing its lead in this respect every year. Since 1889 the average price of coal at the pit mouth in the United States has been considerably less than in our own country. These circumstances, along with a protective fiscal policy, made more stringent in 1922, have imparted a great stimulus to manufactures. About twenty years ago what is still true of the general character of the leading manufacturing industries of Canada (467) was true also of those of the United States, but it is so no longer.¹

502. The principal industries making large use of water-power are saw-milling, flour-milling, and cotton-spinning, more recently also the manufacture of wood-pulp. Water-driven flour-mills may almost be said to have created the towns of Rochester (New York), beside the falls of the Genesee (the power from which is now used for a variety of purposes,) Minneapolis (Minnesota), at the Falls of St. Anthony on the Mississippi, and Spokane (Washington). Water-power is still important in the cotton industry in both its seats, New England, and the southern states. Fall River (Massachusetts), the chief cotton-spinning town in the United States, had its first cotton-mill built in 1813 beside the falls which gave name to the town, and for half a century afterwards all the subsequent mills of the town were built beside the same falls. Water-power is also chiefly employed in the cotton-mills of Lowell (Mass.), of Manchester, and Nashua in New Hampshire, and in those of Augusta and Columbus in the southern state of Georgia. On the other hand, steam-power is mainly employed in those of New Bedford (Mass.), and, in the southern states, in those of Atlanta (Georgia),

	1880.	1930.		1880.	1930.
Rochester	90,000	330,000	Nashua	13,000	30,000
Minneapolis	45,000	465,000	Augusta	22,000	60,000
Spokane	..	115,000	Columbus	10,000	45,000
Fall River	50,000	115,000	New Bedford	27,000	115,000
Lowell	60,000	100,000	Atlanta	34,000	270,000
Manchester	33,000	80,000			

¹ At the census of 1914 the amount of capital invested in industries wholly or mainly connected with iron and steel was about three times as great as that invested in the leading textile industry—cottons,

and Columbia (S. Carolina). The falls of the Passaic are the chief source of the power used in the silk-mills of Paterson (New Jersey), the chief silk-manufacturing town in the United States.

503. Foreign Commerce.—Raw cotton, wheat, and wheat-flour make up nearly one-third of the total value of the exports of the United States, and among the other leading exports are iron and steel manufactures, maize, bacon, hams, and lard, mineral oil, wood and manufactures of wood, copper, tobacco, and living animals. Sugar and molasses and other tropical products (coffee, rubber, jute, &c.) form a large proportion of the imports; and among others are hides and skins, chemicals, raw silk, cotton manufactures, silk, flax, and woollen manufactures, fruit, and tea. Great Britain takes over one-fourth of the total value of the exports, the countries coming next under this head being Canada, Germany, Holland, France. Great Britain is also first in supplying the imports, the countries ranking next being Germany, France, Cuba, Brazil, the British East Indies, British North America, and Japan.

504. Chief Towns.—**Seat of the General Government:** Washington, in the District of Columbia, which belongs to none of the states.

505. Great Inland Centres of Trade.—**A. Lake Ports.**—Rochester (New York), the chief port on the United States side of Lake Ontario; Buffalo (New York), the eastern terminal port for all the lakes above the Falls of Niagara, and western terminus of the Erie canal; Erie, the Pennsylvanian port of Lake Erie, with large imports of iron ore; Cleveland, the largest town in Ohio, about the nearest point of Lake Erie to Pittsburgh, with the largest trade in iron ore on the lakes, and a great outward trade in coal, as well as large manufactures; Toledo (Ohio), at the extreme south-west end of Lake Erie, with a trade originally promoted, like that of Cleveland, by a canal; Detroit (Michigan), at the extreme head of Lake Erie, with large manufactures of automobiles and stoves, connected by

	1880.	1930.		1800.	1930.
Columbia .	. 10,000	50,000	Erie .	. 28,000	115,000
Paterson .	. 50,000	140,000	Cleveland .	. 160,000	900,000
Washington	. 147,000	485,000	Toledo .	. 50,000	290,000
Buffalo .	. 155,000	575,000	Detroit .	. 115,000	1,600,000

ferry with Windsor, Ontario; Chicago (Illinois), the most populous town in the United States except New York, situated at the head of Lake Michigan in such a position as to secure all the eastward trade by lake in the enormous quantities of agricultural and pastoral products from a wide region to the west and south-west, and in addition to that the great bulk of the eastern trade by rail from the same region as well as from the north-west; Milwaukee (Wisconsin), on the west side of the lake, with a considerable lake trade eastwards and southwards, but without the rail trade of Chicago, a town with a large German element in its population; Duluth (Minnesota) and Superior (Wisconsin), two towns facing each other about the head of Lake Superior, but on opposite shores, both with a large trade in grain and iron ores (497).

506. B. Other Towns.—Pittsburgh (Pennsylvania), at the head of navigation of the Ohio, with a river frontage of navigable water unsurpassed elsewhere in the United States (see also 486, 496, 499, 503); Cincinnati (Ohio), lower down the river Ohio; Indianapolis (Indiana), which originally grew up with no other advantage than that of a central situation in a highly productive agricultural region, but now also enjoying the benefit of natural gas and mineral oil; St. Louis (Missouri), on the Mississippi, a little below the confluence of the Missouri, and, what is more important, one of the most important crossing-places of the river Mississippi, which, till about 1890, had no bridge lower down; St. Paul and Minneapolis (502), two adjacent towns in Minnesota, St. Paul at the head of the unbroken navigation of the Mississippi, and now the chief railway centre in the north-west; Kansas City (Missouri) and Omaha (Nebraska), two crossing-places of the Missouri, Kansas City at the confluence of the Kansas River, and on the route westwards from the Atlantic by way of Cincinnati and St. Louis; Omaha farther north, on that leading west by Cleveland and Chicago.

	1880.	1930.		1880.	1930.
Chicago	. 500,000	3,375,000	Indianapolis	. 75,000	365,000
Milwaukee	. 115,000	580,000	St. Louis	. 250,000	820,000
Duluth	. 3,500	100,000	St. Paul	. 40,000	270,000
Superior	. 700	35,000	Kansas City	. 56,000	400,000
Pittsburgh	. 240,000	670,000	Omaha	. 30,000	215,000
Cincinnati	. 255,000	450,000			

507. Seaports.—The principal, in the order of their importance in respect of the tonnage of shipping, entered and cleared in foreign trade, on the average of recent years, are New York, Boston (Massachusetts), Philadelphia (Pennsylvania), New Orleans (Louis.), Baltimore (Maryland), Puget Sound (Washington), San Francisco (Cal.), Galveston (Texas), Newport News (Virginia), a port which has recently developed a large export trade in coal; Mobile (Alabama). New Orleans is a great cotton port, and so also are Galveston and Mobile, as well as Savannah (Georgia), and Charleston (South Carolina), which are not mentioned in the preceding list.

508. In respect of the amount of its foreign commerce, New York is without a rival. It shares with Boston the trade with the interior westwards to Chicago, and thence west and north-west. Both have excellent natural harbours, but New York has the advantage of a way into the interior by the Hudson River and the Erie Canal and the valleys followed by these waterways, whereas Boston is cut off from the interior by the Hoosac Mountains, through which there was no railway tunnel till 1875.

509. Most of the gulf ports have naturally poor harbours. A depth of 36 feet to New Orleans, and one of 29 feet across the bar of Galveston, are maintained only with difficulty. The wharves at Mobile can be reached only by vessels drawing no more than 21 feet. San Francisco has an excellent natural harbour, and has the additional advantage of being the sole outlet for the Californian valley, from the greater part of which, however, it is separated by the arms of the inlet on which it lies.

510. Among the minor seaports of the United States may be mentioned Newport (Rhode Island); Wilmington (Delaware); Norfolk (Virginia), at the south of the entrance to Chesapeake Bay; Richmond (Virginia), a great tobacco port; Wilmington (North Carolina); Pensacola (in the north-west of

	1880.	1930.		1880.	1930.
New York . . .	—	6,950,000	Savannah . .	31,000	85,000
Boston . . .	360,000	780,000	Charleston(S.C.)	50,000	60,000
Philadelphia . .	850,000	1,950,000	Galveston . .	22,000	55,000
New Orleans . .	216,000	460,000	Wilmington		
Baltimore . .	330,000	805,000	(Del.) . .	42,000	110,000
San Francisco	234,000	635,000	Richmond . .	..	185,000

Florida), chiefly a timber port (495); Portland (Oregon), a great wheat port of rising importance.

511. The United States has two outlying territories, Alaska and the Hawaiian Archipelago (616). Alaska lies to the north-west of the Dominion of Canada, and was acquired from Russia by purchase in 1867. It has an area more than six times that of Great Britain, and is traversed by a magnificent river, the Yukon, but produces commercially little besides furs, salmon, and gold. Gold has long been mined on Douglas Island opposite Juneau, in 58° 15' N., but now the chief deposits are at Nome, on the north side of Norton Sound, nearly opposite the mouth of the Yukon.

512. The foreign possessions of the United States were mainly acquired in consequence of a war with Spain. They consist of the West Indian island of Porto Rico, the Philippine Islands, the island of Guam, part of the Samoan Archipelago, the Virgin Islands (West Indies), and the Panama Canal zone. Total population over 14,000,000.

MEXICO AND CENTRAL AMERICA.

513. In these parts of North America Spanish is the language of the civilised inhabitants.

514. **MEXICO.**—Mexico is a country with a government nominally similar to that of the United States. Its territory, though between eight and nine times the size of Great Britain, is in the north a continuation of the arid and desert region in the south-west of the United States, and the densest population is found on the narrower portion to the south of the Tropic of Cancer, and more particularly on the tableland of **Anahuac**, on which stands the city of Mexico, at the height of about 7500 feet above sea-level. On this tableland are grown grain-crops, **maize** being the chief. Here also is cultivated the **agave**, the sap of which when fermented yields the favourite drink of the Mexican people, called **pulque**. An allied plant which grows wild, and thrives admirably in the somewhat dry climate of the low-lying peninsula of **Yucatan**, furnishes **henequen** (59), which

	1880.	1930.		1930.
Portland (Me). .	34,000	70,000	| Portland (Or.) . .	300,000

is rapidly growing in importance as an export. On the lowlands outside of the tableland are grown various tropical products, coffee being the most important, then cacao, sugar, tobacco, and vanilla. The forests also yield cabinet and dye-woods.

515. Hitherto by far the most important exports have been the precious metals, and especially silver. In other minerals also Mexico is remarkably rich, but even in the most accessible of all the provinces, that of Vera Cruz, on the Gulf of Mexico, improved communications are needed to develop that wealth. There is abundance of coal, iron ore, and petroleum, besides other minerals, to reward enterprise in supplying this defect. Already these are being increasingly worked, especially petroleum along the east coast behind Tuxpan (76). The Sabinas coalfield in 28° N. is connected by rail with the rest of the republic, and so also is the iron mountain of Cerro del Mercado at Durango in the north-west. Iron and steel works have been erected at Durango, Monterey, and elsewhere.

516. The difficulties of communication have long been one of the chief obstacles to the development of the country, but the railway system of Mexico is extending. There has been a railway (in English hands) from Vera Cruz, the chief port, to the capital since the beginning of 1873. Since 1884 there has been direct railway connection between the city of Mexico and the United States, and two other railways from this city to the United States have since been opened. A railway has been constructed across the Isthmus of Tehuantepec, where the Rocky Mountains become narrowed to a single chain about 800 feet in height. At present improvements are being made on this railway with the view of making it part of a great Atlantic-Pacific trade-route, and harbours with a depth of 33 feet, with quays and wharves provided with the best modern appliances for the handling of cargo, have been constructed at Puerto Mexico, the Atlantic, and Salina Cruz, the Pacific terminus of the railway. Among other railways projected is one from the Pacific seaport of Acapulco to the capital. Acapulco has the finest natural harbour on the coast of Mexico, and was a place of great note in the early period of Spanish domination.

Monterey 130,000

517. Since the opening of the northern railways a much larger share of the Mexican commerce has naturally come into American hands. The United States and the United Kingdom take together more than four-fifths of the entire exports, the share of the former being much the larger of the two. These countries also supply the bulk of the imports, which consist mainly of manufactured articles.

518. **Chief Towns.**—Capital, Mexico. **Other Inland Towns**—Leon, Guadalajara, Puebla, Guanajuato, all on the tableland; Merida (in Yucatan). **Seaports**—Vera Cruz, and Tampico on the Gulf of Mexico, both ports now greatly improved, and Tampico connected by rail with San Luis Potosi; Progreso, in Yucatan; Mazatlan and Acapulco on the Pacific.

519. **CENTRAL AMERICA.**—The six republics of Guatemala, San Salvador, Honduras, Nicaragua, Costa Rica, and Panama, the largest of which has an area of little more than half that of Great Britain, have a surface similar on the whole to that of southern Mexico. Their chief products are coffee (for which soil and climate are excellently adapted), tobacco, and tropical fruits. Communications, still very defective, are being improved, and concessions have been granted for railways to connect all the capitals, as well as for new lines to cross from ocean to ocean.

520. Panama, formerly part of the South American republic of Colombia, declared its independence on November 4, 1903, and a few months later made a treaty with the United States, ceding the Canal zone.

The Panama Canal zone, ten miles in width, contains the only inter-oceanic railway in Central America, the oldest inter-oceanic railway in the world, as well as one of the two great inter-oceanic canals (22). The railway is $47\frac{1}{2}$ miles long, connects Colon or Aspinwall in the north with the town of Panama in the south, and was opened in 1855. The canal, begun by a French company floated in 1880, and completed by the United States, virtually connects the same two places as the railway, though the name of Balboa has been given to the new

Mexico . . .	960,000	Puebla . . .	110,000
Leon . . .	55,000	San Luis Potosi . .	75,000
Guadalajara . .	125,000		

town on the canal immediately to the west of Panama. The larger part of the cargo carried through the canal is from the Pacific to the Atlantic, and consists of grain and Chilean nitrate. Other important commodities are timber (from the Pacific side), coal, petroleum, raw cotton, and iron and steel wares from the Atlantic side. See 671 and tables in Appendix. Under a treaty concluded between the United States and Great Britain in 1901 traffic through the canal is open to all nations on equal terms.¹

521. The west coast of Central America is clifty, and has the best harbours. The eastern shores are mostly low and swampy, and the harbours generally encumbered by bars. It is on this side, however, that most of the trade is carried on, the British Isles and the eastern ports of the United States being the parts of the world that have the bulk of that trade. The best seaport on this side is Belize, the port of **British Honduras**, a Crown colony, with an area about equal to that of the counties of York and Durham taken together, and a population of about 55,000. It is the place of export of a great deal of **mahogany** and other cabinet woods, together with logwood and other dye-woods. The chief of the other ports on this side are Truxillo (Honduras), Bluefields and Greytown (Nicaragua), Puerto Limon (Costa Rica). From some of these ports there is a rapidly growing trade in fruit (bananas, &c.) with the United States.

THE WEST INDIES.

522. This group of islands has an aggregate area not much larger than that of Great Britain, with a population of about 8,000,000, the two largest islands, Cuba and Haiti, being very thinly peopled. The larger islands, in the west, are known as the **Greater Antilles**; the smaller islands, in the east, as the **Lesser Antilles**.

523. The Bahamas are flat coral islands which export sponges. Nearly all the other islands, except Barbados, are mountainous, and the mountains and higher parts of the surface generally are covered with dense forests, which yield cabinet and dye-woods

¹ Agitation against this provision is, however, still (1922) maintained by an influential section in the United States.

to commerce. The navigation both of the Atlantic and the Caribbean Sea is sometimes rendered dangerous by hurricanes in the period from July to October, and especially in September, when the sea is at its hottest and winds are very variable.

524. The population is almost entirely descended from natives of other continents, the aboriginal population having been nearly exterminated within a short period after the discovery of the group by Columbus. A very large proportion of the inhabitants are the descendants of negroes, originally slaves, but now all free. Indian and Chinese coolies have been introduced as labourers since the liberation of the negroes, on account of the unwillingness of free negroes to work. The rapid increase of the negro population is, however, gradually doing away with the difficulty of obtaining plantation and other labourers.

525. The majority of the islands owe allegiance to European powers—Great Britain, France, the Netherlands. Cuba and Haiti are republics under the protection of the United States, and since 1916 the nominal republic of Santo Domingo has been under a United States military governor. The Virgin Islands were purchased from Denmark by the United States in 1917, and Porto Rico also belongs to that country.

526. Cuba.—The most populous part of this island is in the west, where on the north coast stands Havana, the capital of the island, and the only large town in the whole archipelago. It is situated on a fine bay, and has an excellent natural harbour. Its chief plantation products are sugar and tobacco. In the east of Cuba valuable iron mines are worked in the neighbourhood of the port of Santiago de Cuba (south coast). Other workable minerals exist in the same mountainous district. See also 69.

527. Porto Rico yields tropical products and rears cattle. Sugar and coffee are its principal products. It now enjoys free trade with the United States, which regards all shipping between this island and the States as coasting trade, and hence restricts it to ships of the United States.

528. British Islands: (1) Jamaica, an island about two-thirds of the size of Yorkshire, south of eastern Cuba; (2) the

Havana 600,000

Bahamas ; (3) the Leeward Islands—the Virgin Islands (part of the group), St. Christopher (St. Kitts), Nevis, Antigua, Montserrat, and Dominica ; **(4) the Windward Islands**—St. Lucia, St. Vincent, Grenada (with the Grenadines) ; **(5) Barbados ; (6) Trinidad and Tobago**, the former a considerable island lying opposite the delta of the Orinoco, the latter farther to the north-east.

529. Formerly sugar was the most important export in nearly all these islands, but other commodities are now also of value. Cacao and spices are the chief products of Grenada, and since 1885 fresh fruits (oranges, bananas, coco-nuts, &c.), sent mainly to the United States, but also to the United Kingdom, have risen to the first place among the exports of Jamaica. Cacao is also largely grown in Trinidad, Dominica, and St. Lucia ; Montserrat is well known for its lime-juice ; and Antigua has a large trade in pine-apples. Asphalt, obtained from a large lake in the interior of Trinidad, is also a large export. Much sisal hemp is cultivated.

530. French Islands : Guadeloupe and Martinique, with some smaller islands, and half of St. Martin.

Dutch Islands : The three considerable islands of Curaçao, Aruba, and Bonaire (or Buen Ayre), off the north coast of Venezuela, together with two smaller islands, and half of St. Martin, among the British and Leeward Islands.

The importance to the United States of the Virgin group is that the principal island, St. Thomas, has a fine harbour lying on the direct route from the Panama Canal to Europe.

SOUTH AMERICA.

531. This, the smaller half of the New World, has at least four-fifths of its area within the tropics, and hence yields chiefly tropical products ; but here as elsewhere the temperate area, relatively to its extent, furnishes a greater abundance of commercial commodities. In this part of the continent the rate of increase in the production of such commodities, and the development of means of distribution for them, are now most rapid. Here also European immigration is most constant.

532. The lofty chains of the Andes, on the west side of the

continent, form an important climatic barrier. In the latitudes in which the trade winds prevail (8) they arrest the moisture-laden winds from the Atlantic, draining the moisture out of winds that had already been partly drained in their course over the continent farther east (9). The western slopes of these mountains, on the other hand, receive in these latitudes no rain from the Atlantic, and as far as 33° S. little or none from the Pacific.

533. Some of the mighty rivers to the east of the Andes form excellent waterways. The **Orinoco**, in the north of the continent, is navigable for steamers continuously for nearly a thousand miles. The **Amazon** is navigable without interruption to the base of the Andes, a distance of 2600 miles from its mouth, and 50,000 miles of navigation are afforded by the main stream and its tributaries. Many of these tributaries, however, have their navigable course greatly obstructed by falls and rapids; so, for example, the Xingu and Tapajos on the right bank, the upper Rio Negro on the left. The **Madeira** is continuously navigable for steamers to beyond 8½° S., but there then follows a series of falls and rapids extending over a distance of 200 miles, interrupting the communications between Bolivia and Brazil. To overcome this difficulty a railway was completed in 1912. The **Araguaya** and **Tocantins**, which enter the Rio Para (a southern arm of the Amazon) in one stream, both have their navigation more or less obstructed in the same way. Falls and rapids likewise beset the course of the Rio São Francisco, and those of all the other rivers of the mountainous part of eastern Brazil, including that of the middle Paraná. The inland waterway which is already of most importance and likely to remain most useful to commerce in the future is that from north to south formed by the upper Paraguay and the lower Paraná, a waterway which is uninterrupted from near the source of the former river, and which, like the Mississippi, brings hot and temperate climates into direct communication (485). Its chief drawback is the shallowness of its estuary, the Rio de la Plata, or River Plate (552).

534. The population is still very scanty, probably not more than 65,000,000. Whites of pure blood form only from two to three-tenths of the whole, negroes about one-tenth, and the

remainder are either native Indians or people of mixed race ; so that on the whole the Indian element still largely predominates. The white population in Brazil is of Portuguese origin, and Portuguese is there the official language ; but elsewhere, except in Guiana, the whites are mainly of Spanish descent, and Spanish is the official language.

SOUTH AMERICAN STATES.

535. BRAZIL, formerly an empire, but proclaimed a republic after a revolution in 1889. In size it is the rival of the United States of America and Canada. The area already turned to account for agriculture, chiefly within a hundred miles of the coast, is very limited. Even the area which travellers in Brazil deem it possible to bring under cultivation at some future time is but a small fraction of the whole. The equatorial valley of the Amazon is filled with dense forests, in which, however, many rubber plantations have been laid out. Close to the coast that trends in a south-easterly direction, stretch ranges of mountains which cut off the Atlantic moisture from the region behind (9). This region is made up mainly of tablelands (*campos*) with a sterile soil. North of about 20° S., that is, throughout the broader part of the country south of the forest, these campos are considered fit for nothing but pasture. There remains nevertheless an area in the south—small, indeed, compared with the extent of the empire, but yet between four and five times the size of Great Britain—in which there are many fertile districts still unsettled, and a considerable extent of these in latitudes fit for European settlers. Formerly the practice of slavery deterred free immigrants from settling in those provinces in which the institution was most firmly established (those growing tropical products), but in 1888 it was entirely abolished. Immigrants, chiefly Italian and Portuguese, are now arriving in thousands. In the temperate provinces of the south-east German and Italian colonies have existed for many years. Iron ore is mined in the state of Minas Geraes, and extensive oil-fields have been discovered between Pernambuco and Bahia. There are sugar refineries and textile industries at Rio Janeiro and Peruambuco. Coffee (52) makes up nearly three-fifths of the

value of Brazilian exports, the next in value being frozen and chilled meat, hides and skins, yerba maté, cotton, and cacao. **Railways** are so far most numerous in the coffee region of Brazil (22° – 24° S.).

536. Chief Towns.—Capital, Rio Janeiro, also the chief seaport, having an admirable natural harbour. It is an outlet for the coffee region, which has its principal outlet in Santos, farther south. Bahia, or San Salvador, and Pernambuco are the seaports of the region producing sugar, cotton, and tobacco; Pará, Maranhão, or Maranham, and Ceará, those of the region yielding forest products—rubber, Brazil nuts, cabinet and dye-woods, together with cacao and sugar. The ports of the temperate region producing animal products (hides, &c.) are Rio Grande do Sul, Pelotas, and Porto Alegre, all of which are accessible only to vessels of small draught (under 11 feet), on account of a bar at the entrance to the shallow lake on which they stand.

537. COLONIAL GUIANA consists of three portions—one **British**, about equal to Great Britain in size; one **Dutch** (Surinam); and one **French** (Cayenne). Cultivation of plantation products (chiefly sugar-cane) is almost confined to the British and Dutch colonies, and in these to a narrow strip of lowlands along the coast and the river-banks, a strip partly below sea-level, and protected by embankments. Demerara is the province of British Guiana in which most of the sugar is grown. The labourers are negroes, mulattoes, and coolies. In all the colonies gold is an important product. The capital of British Guiana is Georgetown. **Cayenne** is used by the French as a place of deportation for convicts.

538. VENEZUELA, a republic in the north of the continent, consisting chiefly of the basin of the Orinoco (533). People of Spanish, Indian, and negro descent, all now free, make up the bulk of the population; and the majority are settled on a small area of highland valleys in the north-east, where branches of the Andes strike north-eastwards, and then eastwards parallel to the coast. The staple product is **coffee**; but cacao, cotton, tobacco, sugar, and coco-nuts, besides other tropical products,

Rio Janeiro	.	.	1,500,000	Pará	.	.	280,000
Bahia	.	.	350,000	Porto Alegre	.	.	275,000
Pernambuco	.	.	340,000	Georgetown	.	.	60,000

between two chains of the Andes, its elevation being between 9000 and 10,000 feet. It is connected by rail with its port, Guayaquil, whence cacao, grown on the western lowlands in greater quantity than anywhere else in South America, is exported. The oil deposits are believed to be of great value. To Ecuador belong also the **Galápagos**, or Turtle Islands, on or near the equator, about 700 miles to the west.

541. PERU, a republic lying to the south of Ecuador, with a population of about 4,500,000, at least half of whom are pure Indians. It is composed of **three zones**—(1) A rainless coast strip (532), fertilised only here and there by rivers from the Andes, which afford the means of irrigation for sugar and cotton plantations tended by Chinese coolies. (2) The **sierra**, or valleys and tablelands of the Andes. On one of the tablelands (partly in Bolivia) lies Lake Titicaca, the largest lake in South America, at the height of 12,600 feet above the sea. At this height even barley seldom ripens, and the only regular food-grain is derived from a native plant called quinoa (wholly unlike our cereals). (3) The **Montaña**, the region on the eastern slopes of the Andes containing the headwaters of the Amazon, a region largely covered with impenetrable forests, of which the most valuable product is rubber. Cotton, coffee, and coca¹ plantations have been started here with success, and there is a large manufacture of cocaine.

542. The chief exports are sugar, cotton, nitrate of soda (79), copper, silver, and llama, vicuña and sheep's wool; the first three derived from the coast-strip, the others from the sierra. Apart from nitrate of soda, the mineral wealth for which Peru (including Bolivia or Upper Peru) was long ago renowned sank for a time into insignificance, but the laying of railways has recently conferred renewed importance on old mines (for example, the silver mines of Cerro de Pasco). Among the railways already in existence in Peru are two of the most remarkable in the world, those namely by which the tablelands of the Andes are reached. One of these is the **Lima-Oroya railway**, which attains in its passage through the western chain of the Andes a

Guayaquil 120,000

¹ Not to be confounded with *cocoa* or *cacao*.

height of 15,600 feet. This railway has been continued northwards to Cerro de Pasco. The other Andes railway is from the southern seaport of Mollendo to Puno on Lake Titicaca and to Cuzco. The value of the Mollendo-Puno line has been increased by the establishment of steamboat traffic on Lake Titicaca and the river Desaguadero, the outlet to Lake Aullagas in Bolivia.

The capital of the country is Lima, an unhealthy city on the coast-strip, a few miles from its port, Callao.

543. BOLIVIA,¹ a republic, now entirely inland, occupying the broadest part of the tableland of the Andes, with a region on the east similar to the montaña of Peru. Fully half the population consists of Indians, and of these probably at least one-half are "uncivilised." The communications of Bolivia with Brazil (533) have already been referred to. The capital of the country is La Paz, on the tableland of Lake Titicaca. The Arica-La Paz railway, the shortest sea-connection (280 miles), rises to nearly 14,000 ft., and has hence very stiff gradients, necessitating a rack-rail near the coast. The silver-mines of Potosi, which made Peru so valuable a possession to the Spaniards, belong to this state, and are still productive, though in a greatly diminished degree. The silver mines of Huanchaca, terminus of a branch of the railway from the Chilean port of Antofagasta to Oruro, are now much more productive, and the tin mines at high altitudes (up to 18,000 feet) east of Lake Titicaca now yield the most valuable Bolivian export. Copper, bismuth, and other metals are also worked, and the eastern forests yield much rubber.

544. CHILE, a republic possessing the whole of the coast-strip south of Peru, together with the islands that fringe the coast, including part of Tierra del Fuego and both sides of the Straits of Magellan except in the extreme east. The northern portion of the country is a continuation of the desert strip on the coast of Peru, and is valuable solely for its mineral products—guano (obtained near the coast from the northern frontier to about 21½° S.), nitrate of soda (obtained in the same latitudes, but farther inland), gold, silver, and copper. Copper is even

Lima	175,000	|	La Paz	145,000
----------------	---------	--	------------------	---------

¹ Population under 3,000,000.

more abundant farther south, along the base of the Andes, north and south of Coquimbo. **Silver** is also found more abundantly to the south of Copiapo. The middle portion of the territory (between about 33° and 38° S.) contains the bulk of the population.¹ The agricultural products are mainly **wheat, barley, and southern fruits**—similar, in fact, to those of Spain and California, which have a climate resembling that of the more populous parts of Chile. Notwithstanding that whites predominate in this republic (instead of Indians and half-breeds, as in most of the others), agriculture here also is generally in a backward condition, except in some parts of the north, where there are some **admirable irrigation works**. A line of railway with many branches to the coast runs from Puerto Montt, south of Valdivia, to Tacna in the north of the country.

545. Next to minerals wheat and other agricultural produce form the chief exports. The leading imports are manufactured articles, coal, and iron. The United Kingdom receives the bulk of the exports, and takes the first place in the import trade, Germany, the United States, and France following. There is a considerable import trade in cattle and other animals from the Argentine Republic across the passes of the Andes, but the export trade by these routes is very scanty. The passes chiefly used are those near the latitude of Santiago, the Portillo and the Uspallata Passes, the former nearly 14,000 feet in height, the latter about 500 feet less.

546. The **Straits of Magellan** are stormy and washed by strong tides, and hence difficult of navigation, so that sailing-vessels still prefer the equally stormy, but for them less dangerous, route round **Cape Horn**, in the south of Tierra del Fuego. Sheep are reared round Magallanes on Magellan Strait.

547. Chief Towns.—Capital, Santiago. Chief ports.—Valparaiso, the port of Santiago; Iquique, farther north, the chief place of export of nitrate of soda and guano.

548. THE ARGENTINE REPUBLIC comprises a territory of more than a million square miles, with a relatively small population.² This territory consists **mainly of a vast plain**

Santiago	.	.	.	695,000	|	Valparaiso	.	.	.	195,000
----------	---	---	---	---------	--	------------	---	---	---	---------

¹ Population, 4,285,000.

² About 10,000,000.

sloping down to the Atlantic from the Andes, and other lofty mountains in the west and north-west. It extends from within the tropics to the south of the continent, embracing the eastern half of Tierra del Fuego, and thus includes a great variety of climate. The districts in which the population is most considerable and most rapidly increasing are chiefly those in the neighbourhood of the estuary of La Plata and along the right bank of the lower Paraná, where there are not only the greatest facilities for commerce, but where also the climate is most favourable to production and best suited to people of European stock and to European domestic animals (44). The provinces to which this description applies are **Buenos Aires**, south of the estuary; **Santa Fé**, on the right bank of the lower Paraná; **Cordoba**, to the west of Santa Fé; and **Entre Ríos**, "between the rivers" Paraná and Uruguay. The climate here is that of the warmer temperate latitudes, generally with an ample rainfall. Towards the interior the rainfall generally diminishes, and irrigation becomes necessary for cultivation about 63° or 64° W. Of late years the Argentine Republic has been undergoing a rapid development similar to that of the United States and the north-west of Canada.

549. The natural facilities for inland commerce afforded by the Paraguay and lower Paraná are mentioned in paragraph 533. Sea-going vessels drawing 21 feet can ascend the Paraná to Rosario. The **Paraná** is likewise navigable for steamers above the confluence of the Paraguay to the place where the river first touches Argentine territory. Steamers can ascend the Uruguay River on the eastern frontier without interruption to the falls which occur in about 31½° S. (at the Uruguayan town of Salto), and sea-going vessels of 14 or 15 feet draught can reach the Uruguayan town of Paysandu. **Patagonia**, the territory south of the Rio Negro, is mainly a stony desert or steppe, but recent explorations have shown that it embraces a considerable amount of fertile land along the base of the Andes. On the coast of this territory there has long been a Welsh colony at Chubut in lat. 43°, where sheep are reared and wheat is grown.

550. As in the United States, railways are being rapidly extended to promote the commerce on which the immigration depends. This republic is, in fact, the part of South America

in which railway construction has been, and still is, most active. Unfortunately, these railways are on different gauges. Nearly all those which radiate from Buenos Aires are on the gauge of 5 feet 6 inches, but some of those which radiate from Rosario and nearly all starting from Santa Fé are on the metre gauge. Those in the provinces between the Paraná and Uruguay are on the gauge of 4 feet 8½ inches, but this difference is not so serious, as the Paraná is not bridged or likely to be bridged. A trans-continental railway between Buenos Aires and Valparaiso in Chile (883 miles), opened in 1910, passes beneath the Uspallata Pass in a tunnel nearly 2 miles long with a summit level of 10,469 feet. Since 1913 Buenos Aires has had railway connection with Asuncion (554) by a train-ferry at Encarnacion on the Paraná.

551. Foreign Commerce.—Animal products of one kind or another, namely, wool, frozen mutton, ox-hides and sheep-skins, salted and hung beef, and tallow, make up a large part of the value. The wheat export is mostly very large, but is variable in amount in accordance with the great vicissitudes to which this crop is subject through drought, frosts, floods, and the ravages of locusts. Maize and linseed are also largely exported. The principal imports are iron and steel and wares made from them, cottons, woollens, sacking, and other manufactured articles, wines and spirits, coal, sugar, coffee, olive-oil, and timber. The United Kingdom, the United States, France, and Germany take the lead in supplying the imports. France, Germany, and Belgium were formerly at the head of the countries receiving the exports, these countries taking the bulk of Argentine wool, but the great development of the exports of wheat, maize, and chilled beef, linseed, and butter has raised Great Britain to the first place.

552. Chief Towns.—**Capital,** Buenos Aires, which stands on the River Plate, and is at the same time the chief seaport. Great harbour-works have provided this formerly very inconvenient port with docks, the entrance to which varies from 21 to 26 feet in depth according to the state of the tide. These works have deprived Ensenada, the port of La Plata, lower down the estuary, of a good deal of its trade; but a growing trade in grain is carried on at Bahia Blanca, in the south of

Buenos Aires 2,150,000

the province of Buenos Aires, where there is a minimum depth of 26 feet alongside the pier. Rosario (549) is now the leading grain-port. Inland Towns.—Cordoba, 160 miles west of Santa Fé; Tucuman, in a sugar-cane growing province in the north, San Juan and Mendoza, at the base of the Andes.

553. URUGUAY, a republic lying between the estuary of the La Plata and Brazil, has a similar surface, climate, and population,¹ and similar industries to the neighbouring provinces of the Argentine Republic (16) and is being as rapidly developed. Among the railways there is one avoiding the rapids of the Uruguay River above Salto (549), which is now connected by rail with Paysandu and the capital. Having a greater rainfall on the whole than the more populous districts of the Argentine Republic, Uruguay rears relatively to area more cattle (44) than the latter country. The industry of meat packing has made the small towns of Fray Bentos and Paysandu, on the Uruguay, well known throughout Europe. Animal products make up four-fifths of the exports. Among the countries sharing in the commerce of Uruguay the United Kingdom has the first place in supplying the imports. The capital of Uruguay is Montevideo, off which, owing to accumulations of silt in the harbour, vessels drawing over 20 feet must anchor and unload by means of lighters.

554. PARAGUAY, an inland republic lying mainly between the Paraguay and Paraná rivers, has a very sparse population,² chiefly of native Indians. Capital, Asuncion. Its chief export products are the so-called Paraguay tea, or maté, and oranges. Tobacco, timber, and skins are also exported.

555. THE FALKLAND ISLANDS, situated to the east of the Straits of Magellan, belong to the British. They have a damp, foggy climate, and are largely covered with peat, but are inhabited by a small number of settlers engaged in the rearing of sheep and cattle. A considerable export trade in frozen mutton is carried on. The islands are visited for repairs and supplies by vessels that have made the passage round Cape Horn. South Georgia is the centre of successful whale fisheries.

Rosario	400,000	Tucuman	90,000
Cordoba	255,000	Montevideo	480,000

¹ Numbering about 2,000,000.

² About 1,000,000.

AUSTRALASIA AND POLYNESIA.

556. AUSTRALIA.—This vast island or continent has an area of nearly three millions of square miles, and is accordingly almost exactly equal in extent to the United States of North America, exclusive of the territory of Alaska. A good deal more than one-third of it lies within the torrid zone, but the great bulk of its population belongs to the region outside of that belt. Most of the inhabitants, moreover, are, in consequence of the nature of the climate, found within two or three hundred miles of the coast.

557. The coast-line of this vast island is remarkable for its long stretches of uniform character, without inlets that can be made use of by shipping even for shelter. The principal exceptions to this character are on the eastern side and in some parts of the north-west.

558. To the north of Hervey Bay, on the east coast, numerous coral-reefs rise to the surface of the water, making the seas somewhat dangerous to shipping, and about one degree north of the Tropic of Capricorn there begins a series of coral-reefs such as are to be seen nowhere else in the world over the same extent of sea. These form together what is known as the **Great Barrier Reef**, which extends for a distance of about 1200 miles, advancing into the latitude of Torres Strait, which it nearly closes. The reef, however, is not continuous. It is broken up by many deep channels, some of which are narrow, others from ten to twelve miles wide. To seamen these channels are of great importance, since they allow of a choice of routes between the seaports in the east of Australia and Torres Strait. The route within the Barrier Reef along the Australian coast has the advantage of a calm and beautiful sea owing to the protection which the reef affords, and is that preferred by steamers, whose course can be more easily controlled than that of sailing-vessels. But this route is one that requires careful navigation, and above all at night, when the reef cannot be made out at a greater distance than half a mile.

559. Even to the west of the Barrier Reef the navigation of Torres Strait has been made difficult by the coral builders,

The hundred miles of sea between Cape York and the south coast of New Guinea, besides being studded with numerous small islands, are crowded with coral-reefs and sandbanks, which leave only one or two safe channels for shipping between them. The channel most used is that which lies immediately north of the **Prince of Wales Group** of islands, on one of which, named **Thursday Island**, there is a much-frequented calling-station for shipping.

560. The surface of Australia is for the most part fairly level, consisting either of plains or plateaux of great extent. In the east, however, a continuous range of highlands runs at no great distance from the coast from north to south, and then bends with the coast westwards, terminating in the south-east of the state of South Australia. The general name of **Dividing Range** is given to the whole of this series, since it separates the low-lying coast valleys and small plains from the broad plains of the interior. In the south-east, where the Dividing Range attains its highest elevation (with peaks above 7000 feet in height), it forms a regular mountain chain known by the name of the **Australian Alps**.

561. The Dividing Range has been the chief obstacle in the establishment of **railway communication** with the interior—an obstacle which has been overcome in some places, especially in New South Wales (**582**), only by great engineering skill. Notwithstanding such difficulties, however, all the states have made railways from their capitals and chief seaports to the principal mining centres, and along the routes by which the produce of the interior is most easily collected; and in 1917 the last link in the series of railways connecting all the Australasian capitals from Perth to Brisbane (3,475 miles) was opened. A second trans-continental railway will be provided by the construction of a line between Alice Springs in Central Australia and Birdum in Northern Australia.

562. Unfortunately different gauges have been adopted in the construction of the railways. In Victoria and some parts of South Australia the gauge is 5 feet 3 inches, in New South Wales 4 feet 8½ inches, which is also that of the West-East trans-continental line from Kalgoorlie in Western, to Port Augusta in South Australia, and in the other states 3 feet 6 inches. The

need for a uniform gauge is engaging the attention of the federal government.

563. The plateau in the east of Australia attains at its widest a breadth of rather more than 100 miles, and gradually sinks on the west to low level plains, which occupy the greater part of the middle of Australia. The western half of the island, so far as it has been explored, consists mainly of a low plateau about 1000 feet in height.

564. *Climate.*—The series of highlands above described is appropriately called the Dividing Range, not only on account of the contrast presented by the surface on different sides of it, but also because of the influence which it has upon the climate. The chief rain-bearing winds of Australia blow more or less from the east, since the island lies mostly in latitudes in which the south-east trade-wind prevails (8), and the causes which give rise to that wind have a great effect on the direction of the air-currents even on the land. Hence, in the western half of the island the prevailing tendency of the winds is seawards, and the period of the year in which this tendency is mostly overpowered is the summer, when the excessive heat of the interior brings about great rarefaction of the air, but at the same time tends to prevent any vapour that may be brought from the sea from being condensed into rain. The highlands on the east, however, have their usual effect on sea-borne vapours, and their eastern slopes are copiously watered at all seasons of the year, but in the tropical and sub-tropical latitudes chiefly in summer (8, 9). On the temperate shorelands most rain, in the south-west the great bulk of the rain, falls in winter (9). The interior plains and plateaux, on the other hand, receive less and less rain the farther they are distant from the sea, and almost all parts which are more than 200 miles from the coast receive much less rain in the course of the year than the driest parts of England (98). This rain, too, falls in latitudes in which the heat and consequent evaporation are much greater than in the British Isles, so that in summer the ground is everywhere parched and cracked and the grass withered, and none but winter crops can be grown, where the rainfall is sufficient to grow crops at all. Even where the average rainfall is adequate for the crops usually grown, and for the wants of the live-

stock reared, it is in many parts very precarious, years of flood alternating with years of drought, leading to great variations in the yield of the crops, and the number of sheep and cattle that can be reared on a given area.

565. Lakes and Rivers.—The nature of the climate of Australia explains that of the Australian rivers. Most of those which enter the sea on the east and south-east of the Dividing Range are comparatively short, but are generally well supplied with water all the year round. They vary greatly in their depth according as the weather is dry or rainy, and many of them are apt in places to overflow their banks. Many of them are navigable for a shorter or longer distance up; but they bring down so much sediment from the neighbouring highlands in which they take their rise, or from which they derive their feeders, that bars are formed in many cases at their mouths, and the entrance of large vessels thus prevented or impeded.

566. All the great rivers of Australia take their rise on the inner slopes of the tableland, and flow towards the west or south-west. Only one of these, the **Murray**, enters the sea by an independent mouth. Before entering the sea this river turns nearly due south and flows through a large shallow sheet of water called **Lake Alexandrina**, which communicates on the south with **Lake Albert**, and a long shallow lagoon known as the **Coorong**, separated from the sea by a broad line of sand-dunes. The longest tributaries of the Murray are those which it receives on its right bank, the **Murrumbidgee** and the **Darling**, the former of which receives on the right another great tributary, the **Lachlan**.

567. All these rivers are poorly supplied with water in proportion to their length, but yet they are navigable by steamers of light draught for a long distance into the interior. In ordinary circumstances the Murray can be ascended as high as Albury, 1700 miles from the mouth, the point where the river is crossed by the railway from Melbourne to Sydney. Except in dry seasons the Murrumbidgee can be navigated up to a point about a degree farther east than Albury, and the Darling is navigable at times up to the confluence of the Bogan, 1000 miles above the point where it joins the Murray. Unfortunately,

however, this river navigation cannot be continued into the sea. The line of sand-dunes which separates the Coorong from the sea is continued in the form of a bar across the mouth of the Murray, where it leaves Lake Alexandrina, so that goods must be laid down or taken up at some point in the course of the river and carried the rest of the distance by land. Locks are being constructed on the Murray to improve navigation and facilitate irrigation. Of the other long rivers which are to be seen on maps traversing the plains in the interior of Australia, the greater number are hardly rivers at all in the proper sense of the term. They are merely watercourses which may be filled at times with running water, but which are often empty except for a few days in the year. They are useful, however, for irrigation (10).

568. **Vegetation.**—On the tableland and plains of the interior an Australian forest is open and easily traversed either by a horseman or by carriages, and leaves plenty of space for grass and herbage on which sheep may be pastured. Such is the general character of the Australian bush. The forests become thinner and thinner the scantier the rainfall. In many of the more arid parts large stretches of ground are occupied by dense masses of low bushes difficult to penetrate and difficult to destroy, these patches being well known as “scrub.”

569. **People.**—The native Australians belong to a very low type of humanity, are few in numbers, and appear to be fast dying out. The first inhabitants sent from the British Isles to Australia were convicts, and the first ship containing convicts sailed in 1787, and arrived at Botany Bay, in New South Wales, early in 1788. Soon free settlers began to arrive (16), and in course of time five separate colonies were founded on the mainland of Australia, and other two on Tasmania and New Zealand. These were mainly from the British Isles, but there is a large proportion of Germans also. Chinese and Polynesians have been introduced into the tropical parts of Australia, the Polynesians being chiefly employed in Queensland as labourers on the sugar plantations; but under the “White Australia” legislation of the Commonwealth of Australia (571), which includes Tasmania, the introduction of all coloured labour is prohibited.

570. THE AUSTRALIAN STATES AND NEW ZEALAND.
—Area, Population, and Products:—

States, etc.	Area in thousands of square miles.	Ratio to Great Britain.	Population in thousands.		Density per square mile.	Number per head of population, 1921.		
			1871.	1921.		Sheep.	Cattle.	Acres under crop.
Victoria . . .	88	1	730	1,532	17·4	7·9	1·0	2·6
New South Wales .	309	3½	503	2,100	6·8	13·9	1·5	1·8
Queensland . . .	671	7½	120	758	1·1	23·0	8·5	0·7
South Australia . .	380	4½	186	495	1·3	12·1	0·7	6·2
Western Australia	976	11	25	332	0·3	19·7	2·6	4·9
Tasmania . . .	26	¼	99	214	8·2	7·3	1·0	1·3
Northern Territory ¹	524	6	..	4	..	2·3	157·8	0·1
Federal Capital Territory . .	1	..	..	3	2·7	59·0	3·5	1·2
Commonwealth . .	2,975	33	1,663	5,437	1·8	13·9	2·3	2·4
New Zealand . .	105	1½	256	1,219	11·6	19·1	2·6	14·8*

571. The Australian Commonwealth was constituted under an act of the Imperial Parliament passed in 1900, and was proclaimed at Sydney on January 1, 1901. The colonies above mentioned, except the colony of New Zealand, now form the six original states of this Commonwealth, which among other powers has the right to pass laws regulating trade and commerce with other countries and among the states, but subject to the provisos that uniform customs-duties shall be imposed, and that trade shall be free within the Commonwealth; laws regulating taxation, but so as not to discriminate between states, or parts of states; laws as to naval and military defence, including the control of railways for such purposes, railway construction and extension, &c. The legislative authority is vested in a parliament of two houses, namely, the Senate, composed of six representatives of each state, and the House of Representatives, composed of members so that the total is as nearly as possible double the total number of senators.

572. Under the Commonwealth Act it was provided that the seat of government of the Commonwealth should be in New

¹ Transferred from South Australia to the Commonwealth, Jan. 1, 1911.(591).

* Including sown grasses.

South Wales at some point more than 100 miles from Sydney. The Federal Territory containing the Federal capital, Canberra, is in the Dividing Range rather more than 200 miles south-west of Sydney, and the Commonwealth has surveyed a railway about 123 miles long to connect this site with a new harbour on Jervis Bay.

573. With the exception of the minerals the commercial products of Australia are mainly derived from animals and plants introduced by the European settlers. The most valuable of the introduced animals is the sheep, wool (45) holding at the lowest the second place in value among the objects of production in all the colonies. No part of the world has shown itself better suited for the production of fine (merino) wool than the treeless grassy plains with a saline soil bordering the Murray River and its tributaries in Victoria and New South Wales. See 101. Dairying industries are growing in value.¹ A serious plague, both in Australia and New Zealand, has grown out of the introduction of the rabbit, the multiplication of which has in some instances compelled squatters to abandon their sheep-runs, and cultivators their holdings, and has already caused different Australian governments to expend hundreds of thousands of pounds in efforts to extirpate it, or rather to keep it down, since extermination seems impossible. Rabbit skins are exported.

574. In the states which have the greatest extent of land under cultivation (570), wheat is the chief crop (32). Till the end of last century South Australia was the chief wheat-growing part of Australia, but the movement for closer settlement has brought about a great increase in wheat cultivation in all the temperate states, and even before the war New South Wales had come to have the greatest area under this crop though not the highest production.² The vine receives most attention (40) in Victoria and South Australia. Sugar-cane is cultivated in Queensland, and a variety has been found to succeed far beyond the tropics, and is grown even in New South Wales.

¹ Percentages of import of butter into United Kingdom (by weight) :—

	From :	Denmark.	Australia.	New Zealand.
1913	41	14	6
1930	34	14	23

² The area under wheat in the Commonwealth reached a maximum in 1915-16 of nearly 12,500,000 acres ; in 1929-30 it was almost 15,000,000 acres.

In Queensland cotton also has latterly been receiving attention, and with good promise of success. Oranges are cultivated in New South Wales and other southern fruits in the irrigation colonies of Victoria and South Australia (39, 579, 588).

575. Minerals.—Hitherto the most important of the mineral treasures has been **gold**, but the annual output for Australia and New Zealand is decreasing.¹ Victoria stands first in respect of the amount of gold produced, having raised gold since its first discovery in the colony, in 1851, to the value of upwards of £300,000,000, or about twice as much as any other state. The other minerals of commercial importance include **copper** in South Australia and New South Wales; **tin** in all the eastern states and Tasmania; **silver, lead, and zinc** in New South Wales; **coal** (74) in New South Wales (where the coalfields are estimated to have more than twice as great an extent as in the British Isles), and in less quantity in Queensland, Victoria, and Western Australia, as well as in New Zealand; and **oil-shale** (76) in New South Wales. **Ores of iron** are present in large quantity in almost all the states. Of the more important deposits now utilised under government encouragement in the development of iron and steel industries the richest is the Iron Knob, a hill of iron ore, containing a high percentage of iron, situated about 40 miles W.S.W. of Port Augusta (South Australia) and smelted and worked up at Newcastle (New South Wales). Other important deposits exist on the Blythe River in the north-west of Tasmania and on Yampi Sound in the north-west of Western Australia.

576. External Commerce.—The great feature of Australian commerce generally consists in the export of the staple productions of the different states mainly to the United Kingdom directly or indirectly, and the import of British manufactures (17) and the products of other countries, for the most part from Great Britain (110, 111). The commodities thus dealt in may be despatched or received through other states than those from which they were originally sent, or in which they are finally

¹ Gold-yield of Australia and New Zealand (fine ounces) :—

	1905.	1910.	1920.	1930.
Australia . . .	3,660,995	2,720,006	943,190	467,000
New Zealand . .	492,954	446,431	212,973	129,000

consumed or used. Thus, much wool from New South Wales is exported from Melbourne (Victoria); Tasmanian products are often sent for export to Melbourne, those of New Zealand to Sydney, and so forth; and these ports similarly supply the respective states with articles obtained from Europe, Asia, or America. Wool is the leading export of all the states as well as of New Zealand, and a large proportion of the whole is sent to London, where it is sold by auction (115, 136). There are now, however, auction sales of wool in all the large capitals of Australia, and an increasing proportion of wool is being sent direct to the mainland of Europe.

577. In South Australia wool has a rival among the exports in wheat, in Tasmania in tin. New South Wales sends to the other states part of their supply of coal (575). The sugar-growing parts of Australia (574) furnish more or less sugar to the other parts, but large quantities of the sugar consumed in Australia and New Zealand are obtained from Mauritius, Fiji, Java, and elsewhere. Most of the tea consumed in Australia is derived directly from Ceylon and India. A preferential tariff in favour of the mother country is in operation, and it is proposed to extend this preference to other members of the Empire.

578. All the states, and even the ports of the Kimberley district in the north of Western Australia, are now in regular steam communication with Europe. Different routes are followed, but most of the ships pass through the Suez Canal and along the south coast of Australia (21). Since 1872 Australia has been connected by electric telegraph with the rest of the world, through the completion of the overland line which crosses South Australia between Adelaide and Port Darwin, and is there connected with a line which passes under the sea to the Dutch island of Java. The cable from Vancouver to Queensland and New Zealand by Fanning and Norfolk islands was completed in November 1902 (25).

579. **THE SEPARATE STATES.**—A. Victoria, the smallest of the states on the mainland of Australia. It occupies the extreme south-east, and is separated from New South Wales mainly by the Murray River. The first permanent settlement on its territory was made towards the close of 1834. Till 1851 it was a dependency of New South Wales. A large part of the

surface is mountainous. The **Australian Alps**, with their spurs, fill the greater part of the eastern half of the state. West of these mountains the Dividing Range sinks in elevation, so that easy routes have been found for the railways laid north of Melbourne to the plains on the other side. The plains to the south of the Dividing Range, lying as they do on the moister side of the mountains (564), are well watered, in many places thickly covered with trees, and clothed with rich grasses, more suited for horses and cattle than for sheep. This is especially the character of **Gippsland**, the region to the south of the Australian Alps. In the north there is greater dearth of rain; nevertheless it is in this part of the state that the area under crops has been most rapidly increasing of late years, since the decline of the goldfields has caused so many people formerly engaged in mining to take to farming. In some years the rainfall even here is sufficient to allow of abundant crops being grown, but when the rains fail great loss follows to the cultivators. Hence, if farming is to be carried on regularly with success in this region, it can only be by irrigation (10, 256). In the north-west is the district called **Wimmera**, at present mainly a waterless desert, but containing a tract with an excellent soil bordering the Murray, on which large irrigation works now managed by a government trust have been carried out at Mildura. The area embraced by these works is a quarter of a million acres. Among the objects of cultivation are grapes, including the raisin and currant grapes; oranges, figs, apricots, and peaches; plums, including plums for prunes; besides tobacco, fibre-plants, and other crops. Farther south the plains are now being reclaimed for wheat cultivation by clearing them of mallee scrub, that is, thickets of a species of eucalyptus. The quality of the wheat is excellent, but the yield small and precarious. Sugar-beet is grown round Maffra in Gippsland.

580. Chief Towns.—Capital and chief seaport, **Melbourne**, situated on the Yarra, a short distance above its mouth in Hobson's Bay, which is the name given to the upper part of Port Phillip Bay. This is a shallow sheet of water, affording a large extent of safe anchorage, but having a very narrow and difficult entrance. On a western arm of this bay stands the port of

Melbourne, including suburbs within a 10-mile radius . 1,000,000

Geelong, a town that has long carried on the manufacture of coarse woollens, which are exported to all the Australian states. In the interior, Ballarat, one of the earliest gold-mining centres; Bendigo, another gold-mining town. On the Murray, Echuca, at the place where the river makes a sharp bend to the north-west, and where a railway on the same gauge as those of Victoria crosses into New South Wales.

581. Melbourne, owing to the structure of the country, serves as the port for all middle and eastern Victoria, and also for the north-west of the state, and for that part of New South Wales which makes use of the railway just mentioned. Several minor ports (Geelong, Warrnambool, Portland, Belfast) serve the south-west of the state, but the south-east is harbourless.

582.—**B. New South Wales**, so called by Captain Cook, who was reminded of the Wales of Great Britain by the appearance of the mountains which he saw from off the coast. It was in this state that the first settlement was founded in Australia (569), namely, on the magnificent natural harbour of Port Jackson, the harbour of Sydney, which has few rivals in the world for either beauty or convenience. Throughout this state the Dividing Range forms a more continuous barrier between the coast lowlands and the interior plains and tablelands than it does in Victoria, and it was long before the settlers found a way across the **Blue Mountains**, as the part of the Dividing Range behind Sydney is called. The interior of New South Wales generally is traversed by the chief tributaries of the Murray, and the treeless plains noted for their wool (573) lying to the north of that river are known as the **Riverina**. Most of the coast-strip of New South Wales is rather sterile, except here and there in the valley-bottoms. On the tableland within the Dividing Range there is a greater extent of good soil, but the rainfall ceases to be sufficient for agriculture within a distance of 150 or 200 miles from the coast.

583. **Lord Howe's Islands and Norfolk Island**, lying to the north-east of Sydney (the latter nearer the north-west point of New Zealand), and each containing a small number of inhabitants, are dependencies of New South Wales.

Geelong	.	.	.	45,000	|	Bendigo	.	.	.	35,000
Ballarat	.	.	.	40,000	|					

584. Chief Towns.—The capital and chief seaport is **Sydney**, on Port Jackson. At the head of the so-called Parramatta River, which is in reality a prolongation of the inlet of Port Jackson, stands Parramatta, in a district noted for its oranges. North of Sydney, on the estuary of the Hunter River, stands Newcastle, the chief coal-mining town and place of export of coal (575). The coal is now exported not only to all the other Australian states, but also to the East Indies, India, Straits Settlements, and Ceylon. Bathurst, on the tableland behind Sydney, is the centre of the chief wheat-growing district of the state; Deniliquin, that of the pastures of the Riverina (582) and the starting-place of the railway by which the wool of that district is despatched for export to Melbourne; Broken Hill and Silverton, near the western frontier, the centre of a silver-yielding area said to be 10,000 square miles in extent; Cobar, the chief copper-mining, and Vegetable Creek, near the northern frontier, the chief tin-mining town. The silver-mining district is connected by a railway on the gauge of 3 feet 6 inches with Port Pirie in South Australia, and most of the ore is carried thither to be smelted.

585. In this state also the structure of the country causes a large part of its commerce to be concentrated on one port, Sydney. The greater part of the tableland of New South Wales has its traffic brought down to Sydney by the railway across the Blue Mountains. The railway running south-west from Sydney to Victoria is separated from the coast by a minor range of hills. The north-east of New South Wales is, however, in large measure served by Newcastle, and the Illawarra coal-field in the south of the state outside the coast range has a port of its own in Wollongong.

586.—C. Queensland, the state to the north of New South Wales, once, like Victoria, a dependency of New South Wales, from which it was separated in 1859. It includes all the islands in the narrowest part of Torres Strait (559). The surface consists mainly of tableland above 1000 feet in height, and the district in the south-east known as the **Darling Downs**, on which are the finest pasture-grasses in the state, is about 2000 feet high, and thus has a comparatively cool climate for its situation,

Sydney, including suburbs within a radius of 10 miles . 1,255,000

within five degrees of the Tropic of Capricorn. Extending far into the torrid zone, Queensland has more varied products than the more southern colonies. Among the tropical and sub-tropical products are cotton, arrowroot, ginger, coffee, fruits, but at present chiefly **sugar-cane**, which is largely grown in the low river-valleys on the coast (55, 574, 577). **Gold** is found at many places, but most abundantly round Charters Towers, near the Burdekin River, about the middle latitude of the state; in the famous Mt. Morgan mine to the south-west of Rockhampton; and round Gympie, on the Mary River, to the south of Hervey Bay in the south-east. **Tin** is found in two widely separate districts. One of these is on the tableland in the extreme south of the state, in a district adjoining the New South Wales tin-field, the centre of this district being Stanthorpe. The other, which is the more productive of the two, is round Herberton, near the east coast, in about $17\frac{1}{2}^{\circ}$ S. lat. A rich gold and **copper** district lies round Cloncurry, in the west of the state, to the south of the Gulf of Carpentaria. Besides metals, Queensland is very rich in **coal**, but it has not, like New South Wales, a coal-field accessible to ocean-going vessels.

587. Chief Towns.—Capital, **Brisbane**, 500 miles north of Sydney, situated on both sides of the Brisbane River, at the head of navigation for large sea-going vessels. Toowoomba, on the tableland to the west of Brisbane, is the chief town on the Darling Downs. Rockhampton, close to the Tropic of Capricorn, is at the head of navigation on the Fitzroy River. Townsville is the outlet for several large gold-fields, including that of Charters Towers, and also for a large area of pastoral country, so that it has become an important seaport though it has only an open anchorage. Brisbane, Rockhampton, and Townsville are the starting-points of three lines of railway which run for a distance of from 300 to 500 miles into the better parts of the tableland, and hence mark the routes along which pastoral settlement is going on.

588.—D. South Australia, to the west of Victoria and part of New South Wales, extending from the south coast of Australia to 26° S. It was founded in 1834 by an Act of the British Parliament, and then was expected ultimately to include

Brisbane, with suburbs within 10-mile radius . 315,000

the territory belonging to Victoria. Most of the inhabitants of the colony are confined to a district smaller than England, which is the only part of the state in temperate latitudes that receives even a fair supply of rain, chiefly in winter. This district lies mainly to the east and north of Spencer Gulf and the Gulf of St. Vincent, where it is traversed by the Mount Lofty Range and the Flinders Range of mountains.

589. Irrigation is practised in the drier parts of the state. At Renmark, a district bordering on the Murray River, similar irrigation works to those of Mildura (579) have been carried out. Irrigation by artesian wells (10) is found to be practicable at several places in the neighbourhood of Lake Eyre, which is the lowest-lying part of Australia. Farther north the telegraph line passes through many well-grassed districts, and other grassy tracts are now known to border some of the river-courses of this region. Sheep-stations are already dotted here and there in this part of the state. Wheat, vines, and olives are grown.

590. Chief Towns.—Capital, Adelaide,¹ on a plain near the east side of the Gulf of St. Vincent. It was founded in 1837, and named after the queen-consort of William IV. About seven miles from the city stands Port Adelaide, on a small inlet of the Gulf of St. Vincent. An outer harbour with a depth of 30 feet, opened in 1908, provides accommodation for large ocean steamers. Burra Burra, about a hundred miles north of Adelaide, is the seat of the chief inland copper-mines, but the principal copper-mines in the state are those of Wallaroo and Moonta, on the peninsula between Spencer and St. Vincent Gulfs. From the neighbouring port some of the ore is shipped for smelting to Newcastle in New South Wales, in vessels which bring back coal to carry on smelting at the South Australian port. At the head of Spencer Gulf Port Augusta, and on its east side Port Pirie, both exporting wool and wheat, the latter also silver (584).

591. The northern territory of Australia, once part of South Australia, now forms two territories of the Commonwealth.² It is tropical, but Europeans outnumber the Chinese. It is stated that wheat could be grown by the white man within 200 miles

¹ Population (including suburbs), 325,000.

² These two territories were again united to form Northern Australia, 1931.

from the coast, and that there are large areas fit for irrigation for lucerne. This would greatly benefit the live-stock industry, which is at present the only one of any importance, cattle being, as in the corresponding latitude of Queensland, the animals most largely reared. Towards the south of the Territory are some well-grassed stretches, suitable for sheep, bordering the Finke and other rivers descending from the Macdonnell Ranges (on the Tropic of Capricorn). Two-humped camels, carrying on the average about 550 lbs., are much used for transport. The most important mineral products are wolfram and tin ore. By means of the trans-continental railway (561) between Port Augusta and Darwin, it is estimated that London would be brought within seventeen days of Adelaide. Chief town, Darwin (578).

592.—E. Western Australia, the largest, but the least populous, of all the states. The vast deserts belonging to it will always cause it to be more imposing in extent than population, and even in the principal settled area, the district in the south-west, which receives autumn and winter rains brought by north-west winds, corresponding to the south-west winds of western Europe (8), the population is very sparse. This is largely owing to the character of the country. Though there is much good soil, the fertile districts are scattered, and the best land for European settlers is far from what was, till the construction of the excellent harbour of Fremantle, the only good harbour of the settled district, that of King George's Sound. Fine hard timber has always been an important product of this state. The population has grown rapidly in consequence of the discovery of rich gold-fields (Coolgardie, Kalgoorlie, &c.) over 320 miles east-north-east of Perth, with which they are now connected by rail. The industry was long hindered by lack of water, but since 1903 a plentiful supply has been pumped from a vast reservoir near Perth. The Murchison gold-field, of which the chief centre is Cue, lies in about $27\frac{1}{2}^{\circ}$ S. In the south-west of the state on the Collie River are important deposits of coal, which is exported from Bunbury.

593. In the northern parts of Western Australia **pearl fisheries** are carried on along the coast, a **gold-field** has been discovered in the interior, and good **pasture-lands** are now attracting settlers. The chief pastures are in Kimberley District, along the

banks of the Fitzroy River, which flows into King Sound, about 17° S.

594. The capital of the state is **Perth**, on the Swan River, about twelve miles above its port, Fremantle. The trans-continental railway to South Australia has made Fremantle "the Brindisi of Australia,"—the place at which all the mails are collected and landed. Albany, on King George's Sound, 260 miles distant from Perth, is the place where the first settlement was made on West Australian territory (in 1826).

595.—**F. Tasmania.**—This state consists of the island so called, together with the smaller islands adjacent. It is separated from Victoria by Bass Strait. Like Victoria and Queensland, the state was originally a dependency of New South Wales, and the first settlement upon it was a convict establishment formed in 1803, but it was made independent in 1825. The original natives, a race resembling the Australians, are now extinct.

596. The surface of the main island is in great part high. A bleak tableland from 2000 to 3000 feet in height occupies the middle and a large part of the western half of the island, and is crowned by mountains and cleft by deep chasms through which issue the torrents which come to form the rivers of the west coast. To the east of this tableland lies a tolerably level and open district, which forms the great grazing-ground of the colony. Elsewhere the colonists have had to contend with land more or less heavily timbered. The climate is somewhat warmer than that of England, very suitable for all English crops, and specially well adapted for fruits. Copper (at Mount Lyell near Macquarie Harbour), tin (at Mount Bischoff and elsewhere), and gold are important minerals; coal-mines and oil-shale (the latter near Latrobe in the north) are also worked.

597. **Chief Towns.**—Capital, **Hobart**, situated at the end of the island farthest from Australia, an inconvenience which is, however, outweighed by the excellence of its harbour, formed by the estuary of the Derwent. Launceston, the next town in size, is situated at the head of navigation on the Tamar, forty miles from the mouth of the estuary known as Port Dalrymple, on the side of the island nearest to Australia.

Perth, with suburbs . . . 205,000 — Hobart . . . 60,000

598. NEW ZEALAND.—This Dominion, first settled in 1840, consists mainly of two large islands and one smaller one, situated at the distance of about 1000 miles from the nearest points of the south-east coast of Australia. The large islands are usually known as the **North** and the **South Island** (frequently called the **Middle Island**), and are separated from each other by **Cook Strait**. The smaller island is called **Stewart Island**, and is separated from the **South Island** by **Foveaux Strait**.

599. Besides the main islands just mentioned New Zealand possesses several groups of small islands at the distance of from 150 to 350 miles. The principal are the **Chatham Islands** to the east, the **Auckland Islands** to the south, and the fertile group of the **Kermadec Islands** to the north-east.

600. The **surface** of all the islands is highly mountainous. One long succession of mountains runs through both islands from the extreme south-west to the extreme north-east. It is interrupted by **Cook Strait**, and divided by gaps into a number of chains to which different names are given. In the **South Island** these mountains lie for the most part close to the west coast, and are so difficult to cross that for more than 100 miles no road connects the east and west coasts. In 1918 a railway with gradients of 1 in 33, passing under **Arthur's Pass** in a tunnel 5·3 miles long, was opened between **Christchurch** and **Greymouth**. To the east about the middle of the island lie the **Canterbury Plains**, which extend for upwards of a hundred miles from north to south, with a varying breadth.

601. The **rivers** of New Zealand are numerous, but even the longer ones are for the most part unfit for navigation. Those of the **South Island** are mostly rapid torrents, fed in summer by the melting snows and glaciers of the **Southern Alps**.

602. The **climate** of New Zealand is not characterised by the liability to droughts from which so much of Australia suffers. The winds that carry the most plentiful rains blow from the north-west, as in the south of Australia, and hence the western slopes of the mountains and the plains at their base are plentifully supplied with rain, whereas the plains on the east have a much more scanty rainfall. The **temperature**, especially in summer, resembles that of **England** more than

that of Italy,¹ with which New Zealand corresponds in latitude. The New Zealand crops, therefore, are similar to those of England (the chief corn-crops, wheat and oats), and though grapes are grown in the open air in the northern districts, wine is rarely made from them. The high average yield of wheat in New Zealand is shown in par. 32. The more abundant rains of New Zealand cause the pastures to be richer than those of the Australian colonies, and English cultivated grasses thrive remarkably well. On the pastures the Lincoln, Leicester, and other breeds of English sheep yield long, strong, and lustrous wools. See also par. 573. The minerals of New Zealand are of great value, the chief being gold (575) and coal. The gold is produced in several places, most abundantly at present in the Thames valley in the North Island; the coal is an excellent steam-coal.

603. The natives of New Zealand, called the Maori, are the most intelligent of all the natives whom the Europeans met with in any of the Australasian states. They are a brown-skinned, well-formed people, fond of tattooing themselves. Most of them live on the North Island. Their number, formerly decreasing, has now begun to increase.²

604. The principal exports from New Zealand are wool, frozen and other preserved meats (23), gold, kauri gum (63), butter, tallow, and wheat. Among the minor exports is New Zealand flax. The chief imports are manufactured articles, tea, and coal. More than three-fifths of the trade, both export and import, is carried on with the United Kingdom. In November 1903 New Zealand adopted a preferential tariff in favour of the mother country by dividing certain commodities into three classes, and raising the duties on these, or laying duties on them, against foreigners, but not against the mother country.

605. **Chief Towns.**—Capital, Wellington, in the south of the North Island, on an inlet from Cook Strait, forming a safe and commodious harbour (Port Nicholson). It is about 1240 miles from Sydney. Auckland, on a narrow isthmus of the

Wellington, with suburbs 145,000 | Auckland, with suburbs 215,000

¹ See the diagrams in illustration of this statement in the ninth edition of Mr. Chisholm's "Handbook of Commercial Geography" (Longmans).

² In 1896, 40,000; in 1921, 53,000; in 1931, 70,000.

long peninsula of the North Island which runs out to the north-west, is a calling-station for steamers from San Francisco and the Panama Canal to Sydney, and as it lies on the east side of the isthmus (the west side having only a shallow harbour), vessels from Auckland to Sydney have to sail round the northern end of the island. In the South Island the chief towns are Christchurch and Dunedin. Christchurch is the principal town on the Canterbury Plains. It is situated a few miles from the east coast, and separated by a tunnelled hill from its port, Lyttelton, situated on one of the inlets of Banks Peninsula. Dunedin stands at the head of an inlet farther south, in the old province of Otago, and is the port of the principal gold-fields of New Zealand. Port Chalmers, near the mouth of the inlet, is its out-port, Dunedin not being accessible to vessels of great draught. Invercargill is the chief town on Foveaux Strait; its port, for large vessels, is Bluff Harbour. Greymouth and Westport are the ports of the principal New Zealand coal-fields.

606. NEW GUINEA, which is of about the same size as New South Wales, is the largest island in the world, with the exception of Australia. Its western half, as far as the meridian of 141° E., belongs to the Dutch. In 1885 the southern portion of the eastern half was declared under British, the northern under German, influence. In September 1888 the section under British influence was formally erected into a British Crown colony. It is now under the administration of the Commonwealth of Australia, but not included within it, and is officially known as Papua. The German section, now called the Territory of New Guinea, has been assigned to Australia by a mandate of the League of Nations.

607. The surface of the island is in many parts mountainous. The whole of the narrow south-eastern extremity (which lies almost entirely within Papua) is traversed by chains of mountains, known as the **Owen Stanley Range**, with peaks rising to upwards of 13,000 feet high. The climate is monsoon in type (9), and the island is covered with dense forests which hinder exploration. Two great navigable rivers have been ascended for hundreds of miles into the interior. One of Christchurch, with suburbs 125,000 | Dunedin, with suburbs . 85,000

these is the **Fly**, which forms a great delta on the western side of the gulf of Papua in British territory. The other is the **Sepik**, which enters the sea near the middle of the coast-line of the north-eastern coast. The trade is very trifling; the chief exports are trepang, a marine animal eaten by the Chinese, pearl-shell (69), and copra (62). The supplies of the two former are becoming exhausted. The difficulty of obtaining labourers will probably prove a great obstacle in the way of creating export products of a more lucrative kind, such as are produced in Ceylon and Jamaica.

608. Like other uncivilised natives of tropical countries, the inhabitants of New Guinea are very indolent. Their food-plants require but little cultivation—bananas, yams, sugarcane, coco-nuts, and taro; tobacco is also grown, and is the chief article of barter with the natives. In Papua the great bulk of the land is held to belong to the natives, and private purchases from them are forbidden. The government is the sole legal purchaser, and grants leasehold tenures to planters. The seat of administration of British New Guinea is at Port Moresby, which lies to the east of the Gulf of Papua, and has regular steam communication with several ports in Queensland.

609. **MELANESIA**.—This name, meaning “islands of the blacks,” is applied to several groups of small islands to the east and south-east of New Guinea, inhabited by Papuans.

610. The islands of New Britain, New Ireland, the Admiralty group, and others to the north of the eastern end of New Guinea, formerly the Bismarck Archipelago, belonged to Germany. These are followed south-eastwards by the **Solomon Islands**, the **New Hebrides**, and **New Caledonia**. The last-mentioned island, one of the chief sources of nickel, used in steel-making and plating, along with the adjacent group of the Loyalty Islands to the east, belongs to the French. Numea, or Noumea, in the south-west of the island, is a port of call for the vessels of the French line of steamers which visit the ports of Australia. The former German islands of the Solomon group passed by mandate to Australia, but the others remain a British protectorate. The New Hebrides are under the joint protection of the British and French, neither power having the right to form settlements on the islands.

611. POLYNESIA.—This name is applied to all the small islands of the Pacific Ocean, with the exception of those already mentioned. They are almost all situated within the tropics. Of most of them the chief commercial product is copra (62). A few have a very high value on account of their phosphatic guanos (79), especially the small islands of Nauru and Ocean, just south of the equator to the west of the Gilbert group, both now British. The people belong to the race which includes the Maori (603).

612. The Fiji Islands are a group composed mainly of volcanic islands situated to the north of New Zealand, and mostly lying between the parallels of 16° and 19° S. Their total area is rather larger than that of Wales, and Viti Levu, the largest of the islands, embraces more than half the land-surface belonging to the group. The islands were ceded in 1874 by their native king to Britain, and now form a British Crown colony. Even before that time people of European origin had established plantations of tropical crops on several of the islands, and since that date the products of such plantations (chiefly sugar, but also coco-nut, maize, tobacco, coffee, and cotton) have increased very greatly, and a large trade has thus grown up.

613. The plantation labourers are partly natives of the islands themselves, but Polynesian labourers and Indian coolies have been introduced. The chief towns of the group are sea-ports with fine harbours protected by coral reefs. The capital is **Suva**, in the south-east of Viti Levu. The next in importance is **Levuka**, the former capital, on a small island to the east of Viti Levu. The small island of **Rotumah**, to the north of the Fiji group, is also British, and is annexed to the colony of Fiji.¹

614. The Tonga and Samoan or Navigator Islands lie to the east of the Fiji group, and still farther east are the **Cook** or **Hervey Islands**, the **Society** and **Low Islands**. In 1888 the British flag was hoisted on the Hervey group, the principal of which is **Rarotonga**, and the whole group forms part of the Dominion of New Zealand. To the north of this group, in about 9° S., lies **Penrhyn Island**, now also British; and still farther north (between 0° and 5° N., and east of 160° W.) lie two other small islands now British, **Fanning Island** and **Christmas Island**. All three yield pearl-shell (69) and copra (62).

¹ The total population in 1891 was 124,000; in 1931, 185,000.

(See also 25.) Besides Penrhyn Island, other small islands belonging to the same group (the Manihiki Islands) and to other groups south of the equator and east of the meridian of 180° have been annexed to the British Empire. Many, if not most, of these are uninhabited, and are valuable solely on account of the guano (79) which they yield. In 1899 the Samoan islands were divided between the German Empire and the United States, the German Empire receiving Savaii and Upolu, on the latter of which stands Apia, a centre of trade for the copra of the Pacific Islands, while the United States obtained Tutuila with the fine natural harbour of Pago-pago (pronounced Pango-pango—the *ng* as in *sing*). The former German islands have been placed under the administration of New Zealand. The Society Islands, of which the most important is the charming volcanic island of Tahiti, are under French protection, and so also are the Low Islands and the Marquésas group, to the north of the latter.

615. Between the equator and 15° N. are the Pelew, Caroline, and Marshall Islands, in that order from west to east, and south of the last-mentioned group the Gilbert Islands. The first three of these groups now belong to Japan, which possesses also all the Marianne or Ladrone Islands (to the north of the Carolines) except Guam, which belongs to the United States. In 1892 the Gilbert Islands were annexed by the British.

616. The Hawaiian Islands¹ are an important group of volcanic islands, mainly between 19° N. and the Tropic of Cancer, belonging since 1898 to the United States, of which, since 1900, they form a territory, thus sharing its customs tariff. In area they are about equal to the Fiji Islands, which they resemble in the nature of their products. The chief island is Hawaii, on which the extinct volcano of Mauna Kea rises to the height of nearly 14,000 feet. As in the Fiji group, the plantations belong to people of European stock, and the labourers are partly natives, but to a large extent composed of immigrants.² The native population, an apparently happy but dispirited and indolent race, is dwindling, being unable to compete with the

¹ Formerly known as the Sandwich Islands.

² Population in 1930, 255,000, of whom about 50,000 were Hawaiians. There are 140,000 Japanese in the islands.

immigrant races hardened by a severe struggle for existence. By far the most important export is sugar. Wheat, flour, and pork are the principal articles which the islands take in return. The capital is **Honolulu**, on the island of Oahu.

TRADE ROUTES.

617. Goods are conveyed by sea from any seaport from which it is possible to obtain goods which can be sold at a profit elsewhere. But the route by which the goods are conveyed to their ultimate destination depends on many circumstances, some connected with the nature of the commodities, some with the mode of conveyance, that is, whether by sailing vessel or steamer, and all, of course, connected with the relative situation of the place of origin and the destination of the commodities.

618. To understand how the nature of the commodities carried affects the route, two important considerations must be borne in mind. First, it causes expense to transfer goods from one vehicle (whether ship, railway wagon, or cart) to another. It is therefore an advantage to convey goods directly from the port which serves the district where the goods are obtained to that which serves the district in which they are ultimately sold. But, second, it is cheapest to convey goods in the largest possible vessels, provided that those vessels can be filled. This frequently makes it cheaper on the whole to incur extra costs in unloading and reloading (handling expenses), and send goods first in smaller quantities to a great port, from which they are sent in large vessels to another great port, from which again they may be sent by sea to some other port nearer their final destination.

619. It is bulky goods, and especially such as involve great labour in handling, like coal, timber, ores, and clays, that are most likely to be carried direct, for the quantity of such goods that may be required in a small district may be enough to fill a larger or smaller ship, and thus bring about the greatest possible saving in handling. That is why so many small British and Irish seaports import timber directly from abroad, why so many British seaports export coal sometimes in small

vessels, and why so many small foreign seaports receive British coal, why small ports in Cornwall and Devon send off entire cargoes of china and other clays, why small Welsh ports fill vessels with slates for many destinations, and why comparatively small fishing towns in England and Scotland receive in separate ships cargoes of ice and send out ships laden with barrels of herrings.

620. On the other hand, the economy of carrying in large ships explains why tea, coffee, spices, and other commodities from the east to the United Kingdom come almost entirely first to London, it may be in ships that are largely filled with bulky commodities. Of all these commodities, much greater quantities are used in London itself than in any other centre in the country ; but great quantities are also sent away by rail from London, and great quantities by sea both to British and foreign ports with which London carries on a regular trade. The daily shipping reports show how many ships come to the large ports laden with "general cargoes," that is, cargoes composed of many kinds of goods brought together to get the advantage of carriage in large ships.

621. It is obvious that the advantage of carrying in large ships will be the greater the longer the distance that goods are so carried. That is one way in which the relation of the place of origin to the destination of goods affects the route followed (617). It is one reason why the eastern goods mentioned come chiefly to London in the first instance, and also the reason why the great bulk of Australasian and Cape wool imported into England comes first to London (136), even though not a pound of it is worked up in London, but all has to be sent away again either to Bradford (123) or some other town at home or to foreign countries.

622. Then, again, the nature of the commodities may affect the route at sea by determining whether the goods are sent by sailing vessel or steamer, for which the routes in many cases differ. Perishable goods, like fresh meat, vegetables, fruit and flowers, butter and eggs, and goods of high value in proportion to their bulk, like mails, silks, watches, jewelry, ornamental feathers and artificial flowers, are taken by the quickest routes in spite of the increased cost per mile, and may often be

transferred from sea to land, and then again from land to sea if necessary, for the sake of speed.

623. The goods for which **sailers** are likely to be preferred are generally those bulky goods which have already been instanced as likely to make up whole cargoes. But even bulky goods are being carried in larger and larger quantity by steamers, not only in consequence of the saving of time and the greater certainty with which their arrival can be counted on, but also because steamers can in many cases carry even bulky goods as cheaply, or nearly as cheaply, as sailers. This is partly because bulky goods, if heavy, are often valued as ballast, and partly because steamers are on the average larger than sailers. Sailers are, however, still much employed, and for distant voyages even very large sailers.¹ Hence it is important to note how their routes are more or less governed by the prevailing winds, as stated in par. 21.

624. **Steamer routes** are almost independent of winds and currents. Where practicable, the shortest route from port to port is adopted by steamers, and that is a route following an arc of a great circle of the earth, in other words, a circle of which the centre of the earth is the centre. Hence where the route is from north to south or the reverse a meridian is followed, but where the route is from east to west it is only on the equator that the route lies along a parallel of latitude. As these parallels become shorter and shorter towards the poles, the shortest or **great circle routes** deviate more and more from the parallels in the same direction. The farther north an east-to-west route lies in the northern hemisphere the more will it curve towards the north from the parallel connecting places at the ends of the route, in the opposite hemisphere the more will it curve to the south as one nears the south pole. In the northern hemisphere if the route is to a port lying north-east of the starting-point, and thus connected by a straight line with that point on a map drawn on Mercator's projection,² the great circle route will be drawn on that projection by a curved line.

¹ Sailers with a capacity of as much as 8000 tons dead weight have been built.

² Mercator's projection is the only one on which all directions referred to points of the compass are shown by straight lines. That is why this projection is nearly always used for marine charts.

lying to the north-west of the straight line ; if the course is from north-west to south-east, the curve will lie to the north-east of the line joining the two ends. If the course is from south-west to north-east in the southern hemisphere the curve on the map will lie to the south-east, and if from north-west to south-east it will lie to the south-west of the respective straight lines joining the points of departure and arrival.

625. It is only on a globe that great circle routes can be at once seen and measured. This is done by means of a flexible strip of brass or other material called a quadrant, marked in degrees of the earth's equator according to the scale of the globe for which it is constructed. Each degree represents 60 nautical miles,¹ the mile in which ocean distances are usually stated.

626. To take great circle courses, however, is not always practicable. The relations of sea and land may prevent it, and so also may the character of the climate. For example, the great circle route from Cape Town to Wellington, New Zealand, goes to the south of the Antarctic Circle, and for that reason a more northerly though longer route is necessitated.

627. Among frequented ocean routes those in which great circle sailing causes the most marked deviation from the parallels of latitude are those of the North Pacific, where very wide stretches of ocean have to be crossed between the ports of North America and those of Eastern Asia. Yokohama is in a more southerly latitude than San Francisco, yet a steamer sailing for Yokohama from San Francisco begins by sailing north-westwards, and describes a curve which rises to about 48° N. The route from Vancouver or Puget Sound to Yokohama passes just south of the Aleutian Islands. In the narrower waters of the North Atlantic the rise of the east-west great circle routes to the north of the parallels is not so striking, especially since Newfoundland lies in the way on any great circle from the south of Ireland to any American port north of Cape Hatteras. The trend of the coast-line south of that cape is almost on the line of a great circle passing thence to the south of Ireland, and hence it happens that the routes from all American ports from Nova Scotia to the Gulf of Mexico are almost identical from about the meridian of 60° W.

¹ One nautical mile = 1.1507 statute mile.

eastwards to the English Channel, and this is accordingly the busiest tract of the ocean. To reduce the risk of collision in this busy tract different lines of steamers adhere with great precision to certain limits, and adopt slightly different routes on the outward and homeward voyages.

628. On busy routes through different oceans the route is chiefly determined by the relations of sea and land, but are slightly modified by the position of coaling-stations. Next to the North Atlantic route, the most frequented is that through the Suez Canal, which is the meeting-place of all European and North Atlantic lines to East Africa and the Far East, and most of those to Australia and New Zealand. The part from the Straits of Gibraltar to the mouth of the Gulf of Aden is common to most of the lines following these routes. On this section the chief coaling-stations are Gibraltar, Algiers, Port Said, and Aden. These coaling-stations are also great *entrepôts*. At Gibraltar and Port Said many goods are landed by vessels entering the Mediterranean from the west or east respectively for ports of the Mediterranean or the Black Sea, at which the vessels landing the goods do not call. Algiers is a convenient *entrepôt* on account of its intimate relations with Marseilles (about 410 nautical miles distant). Aden is a place at which goods for East Africa can be dropped by steamers belonging to eastern Asiatic and Australasian lines, and goods from East Africa can be picked up by steamers of the same lines. Colombo is the coaling-station and *entrepôt* where the lines diverge that pass round the south of Australia. Singapore is the chief coaling-station and *entrepôt*, and Batavia a minor but still important port for vessels going farther east, and at one or other of these the lines diverge that go round the north of Australia. The main route to the east continues on to Hong-Kong, Shanghai, Nagasaki, and Yokohama, all great coaling-stations and the first two great *entrepôts*, Hong-Kong for southern China, and Shanghai for the Yangtse valley and northern China. Important branch lines proceed from Singapore to the ports of Indo-China, to North Borneo, and to Manila in the Philippine Islands.

629. In the North Atlantic Ocean St. Vincent in the Cape Verde Islands is an important coaling-station both on

the route to Cape Town and that to all the South American ports south of Cape St. Roque. Norfolk, on the coast of Virginia, the place of shipment of the excellent steam-coal of the Pocahontas coalfield in the extreme south of West Virginia (about 400 miles by rail distant), is a place frequently visited for coal by vessels returning from the Gulf of Mexico to the English Channel or the Irish Sea; and the opening of the Panama Canal has made the adjacent port of Newport News a great coaling port on that route. St. Thomas and St. Lucia in the West Indies are coaling-stations visited on routes from North to South America or from Europe to Central and the north of South America, and St. Michael in the Azores may serve the same purpose both for steamers plying between north-western Europe and the West Indies and between North America and the Mediterranean.

630. In the South Atlantic the chief coaling-stations are Cape Town and Buenos Aires, both of which obtain their steam-coal chiefly from Cardiff. On the American seaboard of the Pacific there is no great coaling-station between San Francisco, which gets its coal mainly from the coal-mines of Vancouver Island, and Concepcion Bay in Chile, where coal-mines exist close to the sea. Honolulu is a coaling-station on the routes from western North America to Australia and New Zealand, and Durban, on the Indian Ocean, is of growing importance.

631. The most important land routes connecting England with the continent, used for passengers, mails, and perishable and valuable goods, necessarily start from London, and are interrupted by the sea. The outports on the shortest sea-routes are Dover and Folkestone, connecting England with France by Calais and Boulogne respectively. The Dover-Calais route is shortest of all,¹ being only 22 nautical miles as against 25 on the Folkestone-Boulogne route, but Boulogne has the advantage of being 27 statute miles nearer Paris. Dover also connects with Ostend (63 nautical miles). Other important outports

¹ On this route two projects are now being urged for getting rid of the necessity of handling goods at both ends of the sea-crossing. One is to establish a train ferry, that is, to provide steamers equipped for the carriage of loaded trains, and the other is to pierce a tunnel under the straits.

are Harwich, from which steamers belonging to the Great Eastern Railway run to Antwerp (140 nautical miles), the Hook of Holland (the outport of Rotterdam, 101 nautical miles), and Esbjerg in Denmark (350 nautical miles); Newhaven, whence the London, Brighton, and South Coast Railway runs steamers to Dieppe (76 miles) for Paris; and Southampton, from which the London and South-Western Railway runs steamers to Havre (122 miles), Cherbourg (98 miles), and St. Malo. Regular steamers also run in connection with the Chatham and South-Eastern Railways from Queenborough in the Isle of Sheppey to Flushing in Holland, but this trade is reckoned as belonging to the port of London.

632. Paris is the great focus for the routes touching the coast of France at all the ports from Calais to Havre, the railway distances to that centre being from Calais by Boulogne and Amiens 185 miles, from Dieppe 121 miles, and from Havre $141\frac{1}{2}$ miles.

633. At Paris the main railways going southwards fork, one line passing to the west the other to the east of the Central Plateau. Of these two lines the western proceeds first south to Orléans, then descends the right bank of the Loire to Tours, there crosses the Loire, and continuing southwards by an ancient route up the valleys of the Vienne and Clain passes Poitiers and afterwards goes by Angoulême, Libourne, where it bridges the Dordogne, Bordeaux, where it bridges the Garonne, and Bayonne to the Spanish frontier at the west end of the Pyrenees.

634. The French trains cannot pass into Spain owing to a difference in the gauge.¹ Passengers and goods for Madrid and Lisbon have accordingly to be transferred to other trains at the frontier. The line to Madrid runs south-westwards, ascends to the Spanish tableland through the Pass of Pancorbo, passes Burgos and Valladolid, and afterwards turns south-eastwards to Avila and crosses the Sierra de Guadarrama to Madrid, the distance of which from Paris is 792 miles. From Madrid the railway runs on southwards to Alcazar, where a branch is thrown off south-eastwards, which again forks for Alicante and Cartagena. From Alcazar the line still proceeding southwards crosses the

¹ The gauge of the main lines of the chief European countries, except those of Spain and Portugal and Russia, is the same as that of Great Britain, 4 feet $8\frac{1}{2}$ inches. The Russian gauge is 5, that of Spain and Portugal $5\frac{1}{2}$ feet.

Sierra Morena at the Puerto de Despeñaperros, and thence descends to the Guadalquivir, which it then follows to Cordova and Seville, whence it passes southwards to Jerez and Cadiz, the port for Moroccan mails. From Cordoba a branch winds south to Malaga. The line from Madrid to Lisbon, 410 miles long, runs for the most part parallel to, but generally in Spain above the valley of the Tagus, first on the north then on the south side, recrossing the river in Portugal a little below Abrantes.

635. The eastern of the two lines mentioned in par. 633 first runs south-eastwards up the valleys of the Seine, Yonne, and Armançon, then tunnelling Mont Tasselot between the Côte d'Or and the Plateau of Langres it descends on Dijon. From this point it runs south to Châlon, and then keeping close to the right bank of the Saône passes Mâcon and reaches Lyons. There it crosses to the left bank of the Rhone, and continues southwards in sight of the Cevennes on the right and the Alps on the left through Vienne, Valence, Avignon, and Arles. At Arles it leaves the Rhone and runs south-eastwards to Marseilles, a distance of 536 miles from Paris, 697 from Boulogne, and 724 from Calais.

636. From Tarascon a branch crossing the Rhone passes south-west through Nîmes and Narbonne to the east end of the Pyrenees, and there connects with the Spanish line to Barcelona and the towns of eastern Spain.

637. More important branches diverge on the east side of this route. First, from Dijon runs the line which now forms the shortest route to Milan (508 miles from Paris, 696 miles from Calais). This line runs south-east to Frasnè, crosses the Jura in a tunnel $3\frac{3}{4}$ miles long, descends to Lausanne, and then following the Lake of Geneva and the valley of the Rhone to Brieg, crosses the Alps in the Simplon tunnel ($12\frac{1}{4}$ miles long; summit, 2300 feet), and descending the valley of the Rio Toce past Domodossola proceeds onwards by the south end of the Lago Maggiore to Milan.

638. From Milan railways run west to Turin (155 miles), east to Venice (165 miles) and Trieste (320 miles; Calais to Trieste 1027 miles, as against 1116 miles from Ostend by Cologne, Frankfurt, and Munich), and south to Genoa (93 miles). Proceeding southwards from Genoa the railway skirts

the Italian coast and passes through a large number of tunnels on its way to Pisa. From there one may diverge up the valley of the Arno to Florence (736 miles from Paris) and proceed by Arezzo, the Val di Chiana, and the valley of the Tiber to Rome (902 miles), and thence to Naples (1065 miles), or may continue right onwards to Rome through the Tuscan Maremme.

639. Another branch runs from Dijon to Geneva (354 miles from Paris), and another from Mâcon to the Mont Cenis tunnel. This is the Brindisi route. The line first runs south-east past Chambéry across an easy water-parting between the valleys of the Rhone and Isère, then up the valleys of the Isère and Arc to the tunnel ($7\frac{1}{2}$ miles long; summit, 4380 feet), on the Italian side of which it descends the valley of the Dora Riparia to Turin. From Turin the line runs eastward along the southern base of the Hills of Montferrat to Alessandria, and thence to Piacenza, whence the route is due south-east through Bologna along the base of the foothills of the Apennines to Ancona, and then near the coast by Foggia to Brindisi. The distance of this port from Paris is 1169 miles, from Calais 1357 miles, and from London 1460 miles.

640. By the different railways which are all united at Dijon a great variety of products may be conveyed by rail to London with a short sea break. Among them are raw silk, silk wares, and other eastern products, the same commodities from Italy and the Rhone valley, dates from Algeria, fresh flowers from the mouth of the Rhone valley, watches and parts of watches from the Swiss and French Jura, French wines from Burgundy, gloves from the Grenoble district and Paris, and woollen manufactures from the north of France. The principal articles sent in the other direction from Dover, Folkestone, and Newhaven are woollen and cotton manufactures and apparel, besides goods sent through the parcel post and goods of foreign and colonial origin. For exports by parcel post Dover is the leading port of the country, followed by London (no doubt largely Queenborough) and Southampton. Colonial wool is more largely exported from Dover than any one article of British origin. Marseilles, Naples, and Brindisi are all shipping and receiving places for eastern mails.

641. Less important than the main lines from Paris east

another by Aleppo to Damascus, whence one railway on the gauge of 3 ft. 5½ ins. runs south, east of the Jordan, to Mecca, and another west of the Jordan has been connected since about the end of 1918 with the Nile valley railways, crossing the Suez Canal by a bridge at El Kantara. A metre gauge railway has connected Baghdad with Basra since January 1920.

644. To Milan, Genoa, &c., there are express routes through the St. Gothard tunnel by Calais, Ostend, Flushing, and the Hook of Holland. From Calais the route is by Amiens, Laon, Reims, and Châlons, then up the valley of the Marne, across the Plateau of Langres, then south of the Vosges to Basel, and thence by Lucerne to the St. Gothard tunnel (nearly 10 miles long; summit, 3785 feet) down the valley of the Ticino, across the Lake of Lugano, and thence by Chiasso (Italian frontier station) and Como to Milan. The whole distance by this route from Calais is 756 miles, against 696 miles by the Simplon route (637).

645. From Ostend to Milan the route is first eastwards through the plains of Belgium, past Bruges, Ghent, and Brussels to Liège, then across the margin of the hilly country of Belgium and western Prussia past Aachen to Cologne. From here it runs up the gorge and valley of the Rhine either on the left or the right bank. The left bank route is by Bonn, Coblenz, Mainz, Strasbourg, and Mulhouse to Basel, the other by Wiesbaden, Frankfurt, Karlsruhe, and Freiburg-im-Breisgau to Basel, beyond which the route is the same as that from Calais. The distance from Ostend to Milan by the left bank of the Rhine is 782 miles (from Antwerp 717 miles), by the right bank 795 miles (from Antwerp 730 miles). From Flushing and the Hook of Holland the routes are the same beyond Cologne. To Cologne the route is nearly due east to Wesel, then up the Rhine, and the distance from Flushing to Milan is 567 miles by the left bank, and 580 by the right. From the Hook the route to Cologne is by Rotterdam, Dordrecht, Nijmegen, and Cleve, and the distance to Milan by the left bank of the Rhine is 751 miles, right bank 764 miles.

646. By these routes are conveyed to London Italian eggs, Italian, Swiss, and German silks, Italian, French, and Rhine wines, Swiss embroideries and other cotton manufactures, con-

densed milk, cocoa and chocolate, and large quantities of butter and fresh meat.

647. The Ostend-Vienna express route is the same as the Ostend route to Milan as far as Mainz, then up the Main valley to Frankfurt, thence south-eastwards between the highlands of the Spessart and the Odenwald, and across the Franconian Heights to Nuremberg, and onwards to Ratisbon, Passau, and Linz, all three on the Danube. Beyond Linz the route is the same as that of the Orient Express (642). The distance from Ostend to Vienna is 832 miles, from Antwerp, by the same route from Louvain, 767 miles.

648. To Berlin there are express routes from the same four ports as to Milan by the St. Gothard, namely, Calais, Ostend, Flushing, and the Hook. The shortest railway journey is that by the Hook, but the quickest from London in time is that by Ostend. This is what is called the Nord (North) Express route. To Cologne it is the same as that to Milan, but from Cologne it is down the Rhine either to Düsseldorf, and thence by Soest and Magdeburg to Berlin (572 miles from Ostend), or to Oberhausen, and thence by Hamm and Hanover to Berlin (576 miles). From Flushing the route is the St. Gothard route to Oberhausen, and the total distance to Berlin is 477 miles. From Calais the route is by Lille to Brussels, from which point the route is the same as the Ostend route with the same alternatives from Cologne, the distances being 635 miles by Magdeburg and 639 miles by Hanover. From the Hook the route is by Rotterdam, Utrecht, Amersfoort, the Dutch cotton manufacturing towns of Almelo and Hengelo, and thence to Osnabrück and Hanover, the distance to Berlin being 432 miles.

649. The Esbjerg route from Harwich is a quick route to Copenhagen and the south of Sweden. Train-ferries carry sleeping-cars across the Little Belt from Jutland to Funen (Fyen), and across the Great Belt from Funen to Seeland and Copenhagen, and also across the Sound to Malmö. By this route large quantities of bacon, butter, eggs, and other Danish produce are brought to London.

650. Berlin is the most important railway centre of the continent east of Paris. With the two ports of Stettin and Hamburg it is connected by the easiest possible railway routes

running across plains unobstructed by any important river, the railway to Stettin, $83\frac{1}{2}$ miles, that to Hamburg, 178 miles long. By way of Warnemünde, 140 miles from Berlin, a train-ferry connects Prussia with Gjedser in the south of Seeland in Denmark, and through Denmark with Sweden by the Copenhagen-Malmö train-ferry. In July 1909 a direct train-ferry from Sassnitz on the island of Rügen, 170 miles from Berlin, to Trelleborg in the south of Sweden, a distance of 65 nautical miles, was inaugurated. From the nearest Adriatic ports Berlin is separated by the Alps, the windings through which lengthen the railway distance to Venice, by the Brenner route, to 761 miles, that to Trieste, by Vienna (446 miles) and the Semmering route, to 816 miles.

651. In 1906 a shorter connection between Vienna and hence between Berlin and Trieste was opened for traffic. This is the same as the old (Semmering) route as far as Bruck at the junction of the Mürz-tal with the Mur-tal, but from this point it continues south-west instead of turning to the south-east. It then goes on to Klagenfurt, and afterwards by tunnels through the Karawanken and the Julian Alps to the Isonzo valley, which it descends to the Gulf of Trieste. The aggregate length of the tunnels in the Karawanken is nearly five miles, and the longest tunnel through the Julian Alps is nearly five miles long. This new Bruck-Trieste line also shortens the distance between Trieste and Steyr in Upper Austria, and with the aid of other Alpine tunnels is made use of to shorten the distance between that port and other industrial regions farther west. In 1909 a railway passing through a tunnel, piercing the eastern end of the Hohe Tauern, with a length of 5.3 miles and a summit level of 4020 feet, effected a connection nearly due south of Salzburg between the great east-west lines of Bruck-Innsbruck and Marburg-Franzensfeste. This makes a great reduction in the sea-distance of Salzburg, and shortens to a less extent the distances between Trieste and places in south-west Germany. Farther east and north another trans-Alpine railway, the Pyhrnbahn, traversing the Bosruck tunnel south of Linz leading to Selztal brings about a shortening of the distance between Trieste and Linz, and through Linz with Budweis, Prague, and towns farther north.

652. The principal eastern lines from Berlin are one running north-east to Leningrad, one running east to Warsaw and Moscow, and one running south-east to Breslau (203 miles), Cracow (367 miles from Berlin), Lemberg (580 miles from Berlin), and Odessa (1040 miles). To Galats on the Danube the distance is about the same.

653. The Leningrad and Moscow routes both have connections with the Siberian railway (296). The railway to Leningrad crosses the Oder at Küstrin, the two arms of the delta of the Vistula at Dirschau and Marienburg, then runs north-east to Königsberg, thence eastwards to Vilna, and finally north-eastwards past Dvinsk (Dünaburg) to Leningrad, a distance of 984 miles, or 1602 miles from Ostend, 1416 miles from the Hook. From Leningrad a railway has run since 1906 nearly due east by Vologda and Vyatka to Perm (1070 miles), the chief town in the Ural region west of the mountains, and Ekaterinburg (1380 miles from Leningrad), the chief town in that region east of the mountains, and then south to Chelyabinsk (1533 miles), the starting-point of the Siberian railway. This route forms the shortest connection between the Far East and a European seaport, the total distance from Vladivostok to Leningrad being about 5500 miles, from Dairen about 5700, and from Peking, by Tientsin and Niuchwang, about 6000.

654. From Berlin to Moscow there are two routes, one the same as that to Leningrad as far as Schneidemühl, then eastward by Bromberg to Thorn, the other crossing the Oder at Frankfurt, and proceeding thence by Posen to Thorn. From Thorn the line goes on to Warsaw, where the Vistula is crossed, after which it runs to Moscow by Smolensk, the distance from Berlin being 1200 miles. From Moscow to Chelyabinsk the route is by Samara and Zlato-ust (232), and the distance is 1311 miles, so that the whole distance from Berlin to Dairen is about 6670 miles. The distance from Leningrad to Dairen by this route is 5882 miles. From a point a little east of Samara a line branches south-eastwards past Orenburg and afterwards by the valley of the Sir to Tashkent (2100 miles), which is connected with the Trans-Caspian Railway (303) at a point a little to the east of Samarkand, so that Andizhan, in Ferghana, is now only 2400 miles from Moscow, whereas formerly the

Ferghana cotton, in order to reach Moscow, had to be carried either 1268 miles by rail to the Caspian, across that sea to Petrofsk, and thence 1348 miles, in all 2616 miles by rail, or across to Astrakhan on the Volga, and thence by river boats.

655. The only products of importance that come from the Far East by the Siberian railway are tea and silks. From Siberia itself come furs and butter, the latter mainly from western Siberia. Sometimes wheat also is conveyed from the extreme western parts of Siberia. The chief commodities carried in the opposite direction are agricultural machinery and other manufactures. Much of the Siberian butter ultimately reaches England, but generally, if not always, from a Baltic port.

656. The central situation and large population of Moscow have inevitably made it a very important railway focus. Its nearest port is Leningrad (400 miles). Other important outlets on the Baltic are Riga (by Smolensk, 643 miles) and Windau (in Russian Vindava, 680 miles). The nearest port on the Black Sea is Sebastopol (960 miles), now exclusively a naval port. Odessa is connected with it by two routes almost equal in length (about 1030 miles), one by Kursk and Kief, the other by Kursk, Kharkof, and Elizavetgrad.

657. It is a noteworthy fact that none of the lines connecting the great towns of Russia with central and western Europe pass through the important textile manufacturing town of Lodz (196), which is moreover situated at some distance from the nearest coalfield. Lodz is 88 miles from Warsaw, and 22 miles by rail from the junction on the Warsaw-Vienna line which passes through the coalfield of south-western Poland, which is at a distance of about 140 miles.

658. In Africa there is as yet no through railway route. The Cape-to-Cairo railway is practically being formed by the prolongation of the Nile valley railway (401) and the Cape-Rhodesia railway (427).

659. In North America the shortest trans-continental line north of the Gulf of Mexico is in Canada. Till 1915 the only railway that had a through line was the Canadian Pacific, the length of whose line from Montreal to Vancouver is 2904 miles, but when the St. Lawrence is closed by ice the port made use of

in the east is St. John, New Brunswick, which brings up the total length of the line (by the short route partly through the State of Maine, U.S.) to 3386 miles. The distance to Liverpool from Montreal is 2800 nautical miles, and from St. John 2710, against 3030 from New York.

660. The Canadian Northern Railway, which grew from nothing in 1896, is now the second railway system of Canada. It extends from ocean to ocean, and is now operating trains between Quebec and Montreal in the east, and Winnipeg, Edmonton, and Vancouver in the west. It began in the west, running from Port Arthur south to the Lake of the Woods. Its development has been rapid. In the north-east it runs from Quebec by Montreal and Ontario by a route nearly parallel to the Canadian Pacific Railway, then south of Lake Nipissing to Key Harbour in the extreme north-east of Georgian Bay, and then farther west, north of the Canadian Pacific Railway, but still south of Nipigon to Port Arthur. With much government assistance this railway has for many years, like the Canadian Pacific Railway, been ramifying over the prairie provinces. It reached Edmonton in 1909, and by 1915 was completed through the Yellowhead Pass to Vancouver, whence there is now train-ferry to Victoria, V.I. The company has, however, been in financial difficulties for some years, and like the Grand Trunk Railway has passed under government ownership and operation.

661. In 1903 the Dominion government entered into a contract with the Grand Trunk Railway Company for the construction of a new trans-continental railway from Prince Rupert, on the Pacific coast, to Moncton, in New Brunswick. The eastern direction of this line from Moncton to Winnipeg was constructed by the government, and crosses the St. Lawrence near Quebec by a cantilever bridge, the main span of which is the longest in the world, being nearly 1800 feet from centre to centre of piers, or 100 feet longer than that of the Forth Bridge in Scotland. The easy gradients (**663**) facilitate the carriage of grain to the Pacific, and this together with the short voyage to the Orient will aid the Canadian north-west in competing with rivals elsewhere in the supply of grain to the future industrial region of northern China.

662. The wheat of the north-west is the chief product carried eastwards by these routes, and the arrangement of the long lakes Winnipeg, Manitoba, and Winnipegosis, west of the great lakes of the St. Lawrence, must force all the traffic from that region to the south of those lakes so long as there is not a sufficiently large body of settlers in more northerly latitudes to justify the laying of a railway running from west to east to the north of the lakes. The Lake of the Woods farther east confines the traffic to the narrow belt between that lake and Lake Winnipeg. That is why most of the lines of the Canadian north-west converge on Winnipeg, and why that town has grown with such rapidity since the development of that region (476). The Canadian Pacific line passes north of the Lake of the Woods, and the Grand Trunk Pacific follows the same route, but the Canadian Northern Railway runs from Fort William (475) south of the Lake of the Woods, and enters Manitoba in the south-eastern angle of the province, and thence runs north-westwards through Winnipeg to Edmonton, with a branch to Prince Albert (477). Between Winnipeg and Edmonton the Grand Trunk Pacific has constructed another line of railway.

663. The main Canadian Pacific line, after passing through Calgary, crosses the Rocky Mountains at the Kicking Horse Pass at the altitude of 5300 feet, and on the other side of the mountains has some very steep gradients. The more southerly branch through the Crow's Nest Pass (466) is only 4410 feet high, but there are serious physical obstacles in the way of completing this line to the seaboard. For its route to Prince Rupert (478) the Grand Trunk Pacific selected the Yellowhead Pass to cross the Rockies. The highest point on the line is about 3700 feet, and the gradients are comparatively easy. The ocean distance from Prince Rupert to Yokohama is about 3860 nautical miles, as against 4330 from Vancouver. The Canadian Northern Railway also utilises the Yellowhead Pass, but its route through British Columbia is southwards and terminates near Vancouver, an eastern connection of this company running from Port Arthur north of Lake Nipigon and then by Sudbury and Ottawa to Montreal.

664. There are several routes from the eastern seaboard to the interior of North America which run partly through Canada

and partly through the United States. The short line of the Canadian Pacific through Maine has already been mentioned (659). The Sault Ste. Marie-Minneapolis branch of the same railway (462) is re-connected with the main line a little to the west of Regina by a line which re-enters Canada at Portal, and which brings down vast quantities of Canadian wheat to be milled at Minneapolis. From Montreal to St. Paul (adjoining Minneapolis) by this route the distance is 1119 miles, and to Vancouver 2930 miles. By the Grand Trunk connection with Chicago (462), effected by means of a tunnel under the St. Clair River between Sarnia and Port Huron, Montreal is 849 and Portland, Maine, 1146 miles from Chicago. By another route New York is connected with Chicago by a line which passes over the Niagara River at Buffalo into Canada, and then re-enters the United States by Windsor and Detroit. Here the connection is also being made by means of a double railway tunnel under the Detroit River.

665. The trans-continental lines which lie entirely within the United States have to cross both the Appalachian system and the Rocky Mountains, which necessitate great windings and steep gradients. In the east railways on both banks of the Hudson run northwards for more than 140 miles to take advantage of the same breach in that system, the Mohawk valley, as is made use of by the Erie Canal (490) in proceeding westwards to Buffalo and Chicago. This deviation raises the distance between those two points to upwards of 980 miles. A shorter route, 912 miles¹ in length, connects the two places by way of Philadelphia (90 miles) and Pittsburgh (444 miles), but in one part this route has an average gradient of 1 in 60 for 11 miles, and has one curve so sharp that rails weighing 100 lbs. to the yard have been worn down to 82 lbs. in fourteen months. Windings and heavy gradients occur also on the routes between Boston and Buffalo, the windings being such that even on the route through the Hoosac Mountains (508) the distance by Buffalo to Chicago is about 40 miles greater than that from New York through the same town,

666. The termini both of the West Shore line running up the right bank of the Hudson and the line through Philadelphia

¹ The same distance as that by rail between Chicago and New Orleans.

to Chicago had formerly to be reached by ferry from New York, but tunnels have been pierced under the harbour to connect the city, including Brooklyn, for passenger traffic with the New Jersey shore.

667. The connection of Chicago, and thus of the eastern seaboard, with San Francisco (or rather with Oakland, from which there is a steamer service to San Francisco) by the completion of the Union and Central route, through Des Moines and Omaha, was effected in 1869, and this was the first trans-continental connection north of the Isthmus of Panama. Three passes have to be crossed above 7000 feet in height, the highest 8240 feet. The total distance by this route between New York and San Francisco is 3270 miles by the Philadelphia route, 3338 miles by Buffalo. Denver, Colorado, 1210 miles by rail from Chicago, is connected with the Union Pacific railway at Ogden, east of the Great Salt Lake, by a line rising to altitudes of 10,418 and 10,856 feet and by this route is 1611 miles from San Francisco. Towards the end of 1909 a new trans-continental connection was established by the opening for freight traffic of the Western Pacific Railroad, from the Humboldt River to Oakland. Though this line has easier gradients than the Central Pacific, it is considerably longer.

668. The Northern Pacific and the Great Northern railways have since connected Chicago with Portland, Oregon, and with Puget Sound. The eastern terminus of both these lines is St. Paul, 410 miles by rail north-west of Chicago. The Northern Pacific line crosses two passes each 5560 feet in length (one in a tunnel). The distance from St. Paul to Tacoma, on Puget Sound, is 1912 miles, to Portland 2056 miles, those from New York by Philadelphia 3234 and 3378 miles respectively. The Summit station of the Great Northern railway is only 5200 feet in height, and the distance of Seattle, on Puget Sound, from St. Paul by this route is 1823 miles, from New York 3145 miles. Both these railways have also connections with the head of Lake Superior, at Duluth and the town of Superior.

669. The Atchison, Topeka, and Santa Fé railway and the Southern Pacific both establish connections with San Francisco by way of the southern half of the Californian valley. The former rises in two places to above 7000 feet. It completes a

trans-continental connection by way of St. Louis, where the Mississippi has been bridged since 1874. By the shortest railway connection with the Santa Fé system this city is 2395 miles from San Francisco, while it is 1063 miles from New York by way of Philadelphia, Pittsburgh, Columbus, and Indianapolis; but the shortest connection of St. Louis with the eastern seaboard is that with Baltimore, by Cincinnati, a distance of 920 miles. The Southern Pacific connects San Francisco with New Orleans (2489 miles) and Galveston (2183 miles). Its highest level is 4610 feet, but it sinks in southern California to 263 feet below sea-level.

670. Only a comparatively small number of commodities are conveyed by these trans-continental lines from the western to the eastern seaboard. The only commodity imported in large quantity on the Pacific side for carriage to the Atlantic side is raw silk, the high value of which enables it to bear high transport charges. Great quantities of Californian fruit and of hops and apples from Oregon, Washington, and British Columbia are carried far eastward by rail, and even for export to Europe; and very large timber of the kind of which British Columbia almost has the monopoly is carried by rail from Vancouver even to Halifax for shipbuilding. But the great bulk of the commodities conveyed over these lines are the products of the north-west east of the Rockies—living animals (mainly for the slaughter-houses of Chicago), grain to the lake-ports of Chicago, Duluth, Superior, and Fort William, or for further transport eastwards by rail, and other agricultural products, besides ores and metals from mines in the mountains. Westwards are carried chiefly coal and manufactured goods. Before the opening of the Panama Canal considerable quantities of Hawaiian sugar were imported at San Francisco to be again despatched by sea at Galveston for eastern ports, but this was exceptional. It is for this kind of traffic, however, that the Tehuantepec railway (516), the Panama railway, and the Panama canal (520) are designed. An important advantage of all these last connections between the Atlantic and Pacific is the fact that the great circle route (624) from their Pacific termini to Japan and northern and middle China nearly follows the trend of the coast of North America as far as California,

and even San Francisco is not very far out of such a direct course.

671. The opening of the Panama Canal (520) brought about many changes in ocean routes, but by no possibility can it have such an important effect on the commerce of the world, and lead to such a rapid expansion of traffic, as was brought about by the opening of the Suez Canal. This latter canal greatly shortened all the voyages between the most important parts of the East and West, the West including the eastern seaboard of North America. In a minor but still important degree, it also shortened the distance from Australia to Europe. The table given on p. 266 shows, on the other hand, that the Panama Canal effects no shortening of distance between Europe and the East or Europe and Australia. It will not even make the distance from New York to Shanghai, that is, the Yangtse valley, shorter than that from Liverpool or London by the Suez Canal. It is chiefly the western side of America that will be brought nearer to the Atlantic, and that side of America is, on the whole, far from productive in proportion to its length. By far the most productive parts of it are a few valleys in the United States. Elsewhere that seaboard is largely bordered by mountains rich at most in timber, by deserts, and by dense tropical jungle.

Note.—Many of the place-names mentioned in the section on Trade Routes have been changed since 1918. The following may be noted :—

Andizhan	now	Andijan
Bromberg	„	Bydgoszcz
Budweis	„	Budejovice
Ekaterinburg	„	Sverdlovsk
Elizavetgrad	„	Zinovievsk
Lemberg	„	Lwow
Petrograd	„	Leningrad
Posen	„	Poznan
Ratisbon	„	Regensburg
Seeland	„	Zealand
Thorn	„	Torun
Vilna	„	Vilno
Windau	„	Ventspils (see also p. 272)

APPENDIX.

COLONIAL AND OTHER POSSESSIONS OF EUROPEAN POWERS

Belgium.—Belgian Congo (440).

Denmark.—Greenland, besides the Faroe Isles (251). For Iceland see par. 251.

France.—In *Asia* : Pondichéry, &c., in India (323) ; a large part of Indo-China (347) ; and the territory of Kwang-chau-wan leased from China. In *Africa* : Algeria and Tunis (405) ; French West Africa, including (1) Senegal (436), (2) French Guinea, (3) Ivory Coast, (4) Dahomey and part of Togoland, (5) Upper Senegal and Niger (French Sudan), (6) Upper Volta, (7) Mauritania, and (8) the Territory of the Niger ; French Equatorial Africa (French Congo) and Cameroon ; the Sahara, including Wadai ; French Somaliland on the Gulf of Aden (446) ; various islands off the east coast of Africa, including Madagascar (449). In *America* : Miquélon (480), French Guiana (537), Guadeloupe and Martinique. In the *Pacific* : New Caledonia and the Loyalty Isles (610) ; the Marquésas group, the Society Islands (with Tahiti) and other Polynesian islands (614).

Italy.—The colony of Eritrea (446) on the Red Sea, Italian Somaliland extending from Cape Guardafui to the port of Kis-mayu south of the mouth of the Jub ; Abyssinia (447) ; and Libya in N. Africa (404).

Netherlands.—Extensive possessions in the Eastern Archipelago (357) ; Dutch Guiana (537) ; and a few of the smaller West Indian Islands (530) ; part of New Guinea (606).

Norway.—Spitsbergen, Bear Island, and adjacent islands (247).

Portugal.—In *Asia*: Goa and other places in India (323); part of Timor (357); Macao (376). In *Africa*: Portuguese Guinea; Angola (441); Mozambique (Portuguese East Africa) (442); the Azores, Madeira, Cape Verde, and other islands in the Atlantic (450).

Russia.—Siberia (292); Russian Central Asia, with Bokhara and Khiva, and the Trans-Caspian territory (299).

Spain.—In *Africa*: The northern part of Morocco; the territory of Rio de Oro and Adrar on the coast south of Morocco, from the mouth of the Wady Draa to Cape Blanco; Ifni, a small coast strip north of Rio de Oro; Spanish Guinea (Rio Muni), a small strip of coast to the north of the French Congo territory (Bight of Biafra). Spain also possesses the Canary Islands (a province of Spain), with those of Fernando Po, Annobon, and others off the coast of Guinea (450).

Turkey.—Asia Minor.

United Kingdom.—In *Europe*: Gibraltar (263); Malta and Gozo (275). In *Asia*: Cyprus (314); Aden in Arabia (316), British India (323; see also 321, 347); Ceylon (345); Straits Settlements with the Federated Malay States (353); North Borneo (363) and Labuan (364); Hong Kong, with a portion of the opposite mainland leased from China (376). In *Africa*: in south Africa, the Union of South Africa, South West Africa Protectorate, Bechuanaland, Rhodesia, &c. (414, 420, 421, 427); in west Africa, Gambia, Nigeria, Sierra Leone, Gold Coast, &c. (436); in east Africa, Nyasaland, Kenya Colony and Protectorate, Uganda, Tanganyika Territory (mandate) (443, 444), British Somaliland on the Gulf of Aden (446); islands in the Indian and Atlantic Oceans (448). In *North America*: Canada (455), Newfoundland (480), the Bermudas (481), British Honduras (521), islands in the West Indies (528). In *South America*: British Guiana (537); Falkland Islands (555). In *Australasia*: the Australian Commonwealth, including Tasmania; New Zealand (570). In the *Pacific*: part of New Guinea (606), the Fiji islands (612), various small islands (614).

PRINCIPAL UNITS OF THE METRIC SYSTEM OF WEIGHTS AND MEASURES.

1 metre	= 39·37 inches = 3·28 feet.
(1 kilomètre	= 0·6214 mile.)
1 are	= 1076·4 square feet = 0·0247 acre.
(1 hectare	= 100 ares, therefore = 2·47 acres.
1 sq. kilomètre	= 100 hectares = 0·386 sq. mile. Popula- tion per sq. kilomètre multiplied by 2·59 = population per sq. mile.)
1 stère (or cubic metre)	= 61,028 cubic inches = 35·317 cubic feet.
1 gramme	= 0·035 oz. = 0·0022 lb. avoird.
(1 hectogramme	= 3·5274 oz.
1 kilogramme	= 2·205 lb.
1 metric quintal	= 100 kilos = 220·5 lb.
1 metric ton	= 1000 kilos = 2204·6 lb. = 0·984 English ton.)
1 litre	= 1·76 pint.
(1 hectolitre	= 22·0097 gallons, or 2·7512 bushels. Hecto- litres per hectare \times 1·113 = bushels per acre. Kilos per hectare \div 69 = bushels of wheat per acre at about 62 lb. to the bushel.)

RAILWAYS, 1920.

LENGTH PER 1000 SQUARE MILES AND PER 10,000 INHABITANTS.

Old Countries.	Miles.		New Countries. ¹	Miles.	
	Per 1000 sq. miles.	Per 10,000 of Pop.		Per 1000 sq. miles.	Per 10,000 of Pop.
Belgium . . .	396	6·1	Argentine Rep. . .	20	26·0
Czechoslovakia . .	157	6·3	Australian Common- wealth . . .	8	42·8
Denmark . . .	160	8·1	New South Wales . .	16	24·0
France . . .	123	6·7	Victoria . . .	49	27·9
Germany . . .	143	6·0	South Australia . .	9	68·6
India . . .	21	1·1	Queensland . . .	9	75·9
Italy . . .	83	2·4	Western Australia . .	4	120·1
Japan . . .	55	1·5	Tasmania . . .	24	29·4
Roumania . . .	59	4·2	Brazil . . .	5	5·8
Russia . . .	24	3·9	Canada ² . . .	11	46·6
Spain . . .	48	4·5	Ontario . . .	27	37·6
Sweden . . .	54	15·9	Chile . . .	19	14·4
Switzerland . . .	245	10·1	Mexico . . .	10	5·2
United Kingdom . .	195	5·0	New Zealand . . .	30	25·8
England and Wales .	281	4·3	Union of S. Africa .	20	13·8
Scotland . . .	124	8·0	Cape Province . .	15	15·3
Ireland . . .	106	7·8	United States . .	85	24·1

¹ See paragraphs 16 and 22.

² Including electric railways.

DISTANCES IN NAUTICAL MILES.

(60 = 1 degree.)

London to Hamburg, 427; Copenhagen (by Kiel Canal), 587; Gibraltar, 1313; Marseilles, 2003; Port Said, 3213; Odessa, 3435; New York, 3270; Montreal, 3241.

Liverpool to Montreal, 2861; New York, 3035; Savannah, 3605; New Orleans, 4526; Rio Janeiro, 4969; Buenos Aires, 6059.

COMPARISON OF OCEAN ROUTES BY THE CAPE OF GOOD HOPE AND CAPE HORN WITH THE SUEZ CANAL AND PANAMA CANAL ROUTES.

To	From	By Cape Horn.	By Cape of Good Hope.	By Suez Canal.	By Panama Canal.
Bombay	London	...	10,850	6,260	...
	New York	...	...	8,153	...
Calcutta	London	...	11,730	7,902	17,210
	New York	...	12,360 ¹	9,795	14,570
Singapore	London	...	11,417	8,241	15,580
	New York	...	11,040 ¹	10,121	12,940
Hong Kong	London	...	13,030	9,688	14,410
	New York	...	13,660 ¹	11,580	11,770
Yokohama	London	...	14,287	11,150	12,860
	New York	...	14,917 ¹	13,042	10,220
Melbourne	London	...	12,220	11,057	12,860
	New York	...	12,850 ¹	12,920	10,226 ²
Fremantle	London	...	10,900	9,340	14,550
	New York	...	11,571 ¹	11,317	11,910
San Francisco	London	13,563	...	...	8,010
	New York	13,107	...	...	5,370
Vancouver	London	14,363	...	...	8,810
	New York	13,907	...	...	6,170
Callao	London	10,013	...	...	6,190
	New York	9,688	...	...	3,550
Valparaiso	London	8,777	...	...	7,360
	New York	8,452	...	...	4,720

COMPARISON OF SUEZ AND PANAMA CANALS, 1921.

Canal.	Length	Depth	Bottom width	Number of Locks.	Average time of Transit.	Transit Dues per Canal ton.
	Miles.	Feet.	Feet.			
Suez . . .	103	36-39	148-195	0	15 h. 15 m.	8 francs. ³
Panama . . .	43.8	41-85	300-1000	6	7-8 h.	1.20 dolls. ⁴

¹ Via St. Vincent.² Via Rapa (in the Tubuai group—27° 40' S., 144° 20' W.) and Wellington.³ At normal rate of exchange (p. 272) almost 6s. 4d.⁴ At normal rate of exchange almost 5s.

RETURN OF SHIPPING THROUGH THE SUEZ CANAL.¹

Year.	Number of Vessels.	Net Tonnage (000 omitted). ²	Year.	Number of Vessels.	Net Tonnage (000 omitted).
1869	10	7	1905	4116	13,314
1870	486	437	1910	4533	16,582
1875	1494	2,010	1915	3708	15,266
1880	2026	3,057	1920	4009	17,575
1885	3624	6,336	1925	5337	26,762
1890	3389	6,890	1930	5761	31,669
1895	3434	8,448	1935	5953	32,728
1900	3441	9,738			

AUSTRALIAN TRAFFIC THROUGH THE CANAL FROM 1878.

Year.	Net Tonnage (000 omitted).	Year.	Net Tonnage (000 omitted).	Year.	Net Tonnage (000 omitted).
1878	46	1895	840	1911	1,904
1880	108	1900	864	1912	2,037
1885	534	1905	995		
1890	716	1910	1,704		

¹ In 1888, 78·65 per cent., or nearly four-fifths, of the total tonnage that passed through the Suez Canal was under the British flag; in 1903, the British percentage was 62·1; in 1911, 63·9; in 1921, 62·9; in 1930, 55·6.

² The kinds of tonnage most used in shipping transactions are displacement, dead-weight, gross and net tonnage. Displacement is actual weight measured by the Archimedean principle that the weight of a body is equal to that of the water it displaces. The term is used mainly of warships. Deadweight tonnage is the weight of cargo, stores, and bunkers that can be placed on board the ship after provision is made for water in boilers and other items necessary for the propulsion of the vessel. This term is applied chiefly to small vessels. Gross tonnage is the total carrying capacity of a vessel, below and above deck, leaving machinery out of account. The term is used principally of passenger vessels to indicate their size. Net register tonnage is the figure on which dock dues are paid. It is found by deducting from the gross tonnage the space required for the crew, the machinery and the fuel. A register ton of shipping is 100 cubic feet of internal space; a freight ton, according to which freight rates are charged, is either 40 cubic feet or 1 ton in weight, the goods measured by bulk and weight respectively being determined by the shipowners.

³ Later figures are not obtainable, but this traffic may be reckoned as approximately 12 per cent. of the total tonnage passing through the canal.

RETURN OF SHIPPING THROUGH THE PANAMA CANAL.

Year.	Number of Vessels.	Net Tonnage (000 omitted).	Year.	Number of Vessels.	Net Tonnage (000 omitted).
1915	1072	3,772	1920	2478	8,546
1916	760	2,385	1925	4673	23,959
1917	1806	5,818	1930	6185	30,030
1918	2068	6,584	1935	5180	25,310

AREA, POPULATION, AND EXPORTS OF THE PRINCIPAL COUNTRIES AND COMMERCIAL ISLANDS OF THE WORLD.

The population according to the latest census, where there are census returns, the exports generally for the same or a later year.

Explanations.

I. Area in thousands of square miles.

II. Population in millions in the year stated.

III. Density of population (number of inhabitants per square mile).

IV. Value of total exports (in most cases special exports) in millions sterling, for the most part in the same year as that for which the population is given or a later year.

V. Value of exports per head in pounds and decimals of a pound.

The members of the British Empire are printed in thick type.

Countries and Islands.	Year.	I. Area.	II. Popu- lation.	III. Den- sity.	Exports.	
					IV. Total Value, Mill. £.	V. Val. per Head, £.
1. Algeria	1921	222	5·8	26	55·9 ³	9·6
2. Argentine Republic	1914	1153	7·9	7	199·5	25·3
3. Australian Commonwealth	1921	2975	5·4	2	126·6 ³	23·3
4. Austria	1920	31	6·1	199	?	?
5. Belgium	1920	11·7	7·7	670	235·9	37·2
6. Bolivia	1915	514	2·9	3	11·2 ³	3·9
7. Brazil	1920	3275	30·6	9	107·5 ³	3·5
8. Bulgaria	1920	41	4·9	120	65·7 ³	13·5
9. Canadian Dominion	1921	3604 ²	8·8	2	242·1 ³	25·3
10. Ceylon	1921	25·5	4·5	177	18·4 ³	4·1
11. Chile	1920	290	3·8	14	58·4	15·6
12. China Proper	1911	1532	302·1	197	183·9	0·6
13. Colombia	1918	441 ¹	5·9	13	14·1 ³	2·4
14. Congo (Belgian)	1920	910 ¹	11·0 ¹	12	12·6	1·1
15. Cyprus	1921	3·6	0·3	87	1·2	3·9
16. Czechoslovakia	1921	54	13·6	248	214·9	15·8

¹ Estimates.

² Land area.

³ General.

Countries and Islands.	Year	I. Area.	II. Popu- lation.	III. Den- sity.	Exports.	
					IV. Total Value, Mill. £.	V. Val. per Head, £.
17. Denmark	1921	17	3.3	192	81.4	24.9
18. Dutch East Indies	1920	683	49.2	72	189.0 ³	3.8
19. Egypt (excluding Desert)	1917	12	12.3	1040	85.5	6.8
20. Esthonia	1920	23	1.8	76	49.1	28.1
21. Fiji Islands	1920	7.4	0.2	22	2.9 ³	17.8
22. Finland	1919	150	3.3	35	135.4	40.6
23. France	1921	213	39.2	184	862.1	22.0
24. Germany	1919	250	59.9	318	277.4 ⁴	4.6
25. Gold Coast	1921	80	2.0	25	10.8	5.3
26. Greece	1920	59	5.4	93	32.7	6.0
27. Guiana, British	1921	89.5	0.3	3	6.1 ³	20.6
28. Holland or Netherlands	1920	13 ²	6.8	544	122.6	17.9
29. Hungary	1921	36	7.8	220	?	?
30. India, British	1921	1093	247.1	225	265.9	1.1
31. Indo-China, French	1914	310	17.0	55	23.6	1.4
32. Italy	1915	118	40.1	340	312.2	7.8
33. Japan (excluding Korea and Sak- halin)	1920	149	56.0	376	125.3	2.2
34. Kenya Colony and Protectorate	1921	245	2.6	11	5.0	1.9
35. Latvia	1920	25	1.5	60	?	?
36. Lithuania	1919	60	4.8	80	?	?
37. Mesopotamia	1920	143	2.8	20	6.9	2.4
38. Mexico	1910	767	15.1	19	42.4	2.8
39. Newfoundland	1920	43	0.3	6	4.6 ³	17.6
40. New Zealand	1921	104	1.2	12	45.6 ³	37.4
41. Nigeria	1920	332	16.3	49	17.0 ³	1.0
42. Norway	1920	125	2.6	21	65.7	25.3
43. Paraguay	1917	76	1.0 ¹	13	3.0	3.0
44. Persia	1920	628	9.5 ¹	15	14.7 ³	1.6
45. Peru	1908	722	4.5 ¹	7	35.3	7.8
46. Philippine Islands	1918	114	10.4	90	30.2	2.9
47. Poland	1921	149 ¹	26.9	180	?	?
48. Portugal	1911	35	6.0	153	8.2	1.4
49. Roumania	1919	122	17.4	142	4.1 ³	0.2
50. Russia, European	1920	1488	93.4	63	120.0	0.2
51. Sierra Leone (and Protectorate)	1921	31	1.4	45	2.9 ³	2.0
52. Spain	1919	195	20.8	107	32.5	1.6
53. Straits Settlements	1921	1.6	0.9	551	119.5 ³	135.5
54. Sweden	1920	173	5.9	34	125.8	21.3
55. Switzerland	1920	16 ²	3.9	245	85.6	22.1
56. Tanganyika Territory	1921	365	4.0	11	1.3	0.3
57. Tunis	1921	50 ¹	2.1	42	13.5 ³	6.4
58. Turkey (including Asia Minor)	1921	175 ¹	8.0 ¹	46	43.3 ³	5.4
59. Union of South Africa	1921	473	6.9	15	87.7 ³	12.7
60. United Kingdom	1921	122	47.3	389	703.2	14.9
61. United States (excluding Alaska)	1920	2974 ²	105.7	35	1277.1	12.1
62. Uruguay	1920	72	1.5 ¹	21	16.1	10.8
63. Venezuela	1921	390	2.4	6	8.9	3.7
64. West Indies, British	1921	12	1.8	148	24.3 ³	13.4
65. Yugoslavia	1920	96	11.3	119	52.8	4.7

¹ Estimates.² Land area.³ General.⁴ At 250 marks to £1.

TABLE OF SHIPPING.

AGGREGATE GROSS TONNAGE¹ OF VESSELS ABOVE 100 TONS BURDEN
BELONGING TO THE PRINCIPAL MARITIME COUNTRIES.

Countries	1914		1922		1937	
	Million Tons.	Percent- age of Total.	Million Tons.	Percent- age of Total.	Million Tons.	Percent- age of Total.
British { United Kingdom . . .	18.88	44.4	19.30	30.0	17.54	26.3
{ British Dominions . . .	1.40	3.3	2.75	4.3	3.09	4.7
{ <i>Total</i> . . .	20.28	47.7	22.05	34.3	20.63	31.0
United States . . .	1.84	4.3	17.06	26.5	12.43	18.8
France . . .	1.92	4.5	3.85	6.0	2.87	4.3
Japan . . .	1.64	3.9	3.59	5.6	4.48	6.8
Italy . . .	1.43	3.4	2.87	4.5	3.21	4.8
Holland . . .	1.47	3.4	2.63	4.1	2.63	4.0
Norway . . .	1.92	4.5	2.60	4.0	4.35	6.6
Germany . . .	5.10	12.0	1.89	2.9	3.94	5.9
Spain . . .	0.88	2.1	1.28	2.0	1.05	1.6
Sweden . . .	0.99	2.3	1.12	1.7	1.50	2.3
Denmark . . .	0.77	1.8	1.04	1.6	1.12	1.7
<i>Total (World)</i> . . .	42.51	100.0	64.37	100.0	66.29	100.0

MONEYS OF ACCOUNT OF PRINCIPAL COUNTRIES.²

In all civilised countries gold or silver coins determine the value of the rest of the coinage. Those in which gold coins determine the value are said to have a gold standard, the others a silver standard. Since 1873 there has been a great fall in the value of silver in relation to gold, so that an ounce of silver, which in 1873 cost in London nearly 5s., could be bought in 1913 for about 2s. 3d. In consequence of that, the money of silver-standard countries has fallen in value compared with that of gold-standard countries.

A.—GOLD-STANDARD COUNTRIES.

In the United Kingdom, the Australasian Colonies, Union of South Africa, the British West Indies, and British Guiana the money of account is the *sovereign* or *pound*; In France, Belgium, and Switzerland, the *franc* (= 100 *centimes*), worth 9½d.; in

¹ See p. 267, note 2.

² The conversion values attached to foreign moneys in this section are normal pre-war figures. For present rates of exchange the student should consult the newspapers.

Germany the *mark* (= 100 *pfennig*), worth 11 $\frac{3}{4}$ *d.*; in Denmark, Sweden, and Norway, the *crown* (= 100 *ore*), worth 1*s.* 1 $\frac{1}{4}$ *d.*; in Holland, the *guilder* or *florin* (= 100 *cents*), worth 1*s.* 7 $\frac{1}{2}$ *d.*; in Portugal, the *milreis* (= 1000 *reis*), worth 4*s.* 5 $\frac{1}{4}$ *d.*; in Japan (since October 1, 1897), the *yen* (= 100 *sen*), worth 2*s.* 0 $\frac{1}{2}$ *d.*; in Brazil,¹ the *milreis* (= 1000 *reis*), worth 2*s.* 3*d.*; in Egypt, the *piastre* (= 40 *paras*), worth 2 $\frac{1}{2}$ *d.*; in the United States and Canada, the *dollar* (= 100 *cents*), worth 4*s.* 1 $\frac{1}{2}$ *d.* The French franc = the *lira* of Italy (= 100 *centesimi*), the *peseta* of Spain (= 100 *centimos*), the *drachma* of Greece (= 100 *lepta*), the *dinar* of Serbia (= 100 *paras*), the *ley* of Roumania (= 100 *banis*), and the *lew* of Bulgaria (= 100 *cents*).²

B.—SILVER-STANDARD COUNTRIES.

In Austria-Hungary the currency was reformed on a gold basis by law of August 2, 1892, but the standard coin is the silver *krone* (= 100 *heller*), worth 10*d.*; the *florin* is still legal tender. In Russia,³ the *rouble* (= 100 *copecks*) was worth, in 1903, 2*s.* 1 $\frac{1}{2}$ *d.*; in India,⁴ Burma, Ceylon, and Mauritius the *rupee* (= 192 *pies*) has had, since 1893, a standard value of 1*s.* 4*d.*; in China, the *haikwan* (customs) *tael* (1 $\frac{1}{3}$ oz. avd. = 1600–1700 *cash*, or 100 *candareens*, or 10 *mace*), worth, in 1903, about 2*s.* 5*d.*, is used in large transactions; in Hong Kong and the Straits Settlements, the Mexican and the British *dollar* (= 100 *cents*), worth about 1*s.* 8 $\frac{1}{2}$ *d.*, are the standard coins⁵; in Mexico, the *dollar* was worth in 1903 about 1*s.* 8*d.*

¹ In Austria, Brazil, and Russia the usual currency is paper-money, the value of which differs from that of the metallic money of account. As to Russia, see note 3 below.

² In most of the Spanish republics of Central and South America the coinage is also based on the franc, the money of account being equivalent to a five-franc piece, but the silver coinage usually circulates at a lower rate than the corresponding coins in gold-standard countries. This money of account is known in the Argentine Republic, Uruguay, Chile, Ecuador, Guatemala, and Costa Rica as a *peso*, in Bolivia as a *boliviano*, in Peru as a *sol*, in Venezuela as a *venezolano*. In all of them it is divided into 100 *centavos*.

³ In Russia the ratio between gold and paper-currency from 1895 till the War was 10 *roubles* gold = 15 *paper roubles*. By an Imperial decree (January 1897) the imperial, a gold coin value 10 *roubles*, was raised to the nominal value of 15 *roubles*.

⁴ In India and Burma notes are in circulation within certain districts (circles of issue) exchangeable for specie at full value.

⁵ An order of the King in Council, June 25, 1903, authorised the coinage of a Straits Settlements dollar of the same value as the British dollar.

RATE OF EXCHANGE.

There are certain usages in the mode of stating the rate of exchange in commercial reports. The following may serve as examples of the more important of these :—

Hamburg	20 63 = 20 marks 63 pfennigs	per £1
Paris	25 23 = 25 francs 23 centimes	„
Genoa	25 96 = 25 lire 96 centesimi	„
Athens	29 10 = 29 drachmas 10 lepta	„
Amsterdam	12 3 = 12 florins 3 cents	„
Vienna	12 9 = 12 „ 9 kreuzer	„
Copenhagen, Christiania, or Stockholm	18 40 = 18 crowns 40 ore	„
New York or Montreal . .	4 87 = 4 dollars 87 cents	„
Petrograd ¹	25 $\frac{9}{10}$ = so many pence	per rouble.
Madrid	44 $\frac{1}{4}$ = „ „	5 pesetas.
Lisbon	52 $\frac{5}{8}$ = „ „	milreis.
Rio Janeiro	21 $\frac{1}{2}$ = „ „	„
Bombay	16 = „ „	rupee.
Shanghai	29 or $\frac{2}{5}$ = „ „	tael.
Hong Kong or Singapore .	20 $\frac{1}{2}$ = „ „	dollar.
Mexico	20 = „ „	„
Buenos Aires or Montevideo	45 $\frac{1}{2}$ = „ „	peso.

Additional list of changed place-names (*cf.* p. 262).

Alexandrovsk	now	Zaporozhe
Ekaterinoslav	„	Dnepropetrovsk
Honshiu	„	Honshu
Irawadi	„	Irrawaddy
Kiakhta	„	Troitskosavsk
Kiushiu	„	Kiushu
Maulmain	„	Moulmein
Pechili	„	Pohai
Pernambuco	„	Recife
Spalato	„	Split
Tsaritsyn	„	Stalingrad

¹ Sometimes the exchange between Russia and England is expressed in roubles and copecks per £1 (for example, 10·44, 9·77).

INDEX.

(The figures in thick type give the more important references.)

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Aachen, 63, 71, 252 ; population, 74
 Aalborg, 99
 Aarhus, 99
 Aberdeen, 32, 47
 Åbo, 95
 Abyssinia, 179
 Acapulco, 205, 206
 Accra, 175
 Adamawa, 173
 Adam's Bridge, 137
 Adana, 123, 124
 Adelaide, 228 ; population, 233
 Aden, 126, 246
 Adige, 81, 106
 Adis Abeba, 179
 Adour, 56
 Adrianople, 115
 Ægean Sea, 112
 Afghanistan, 128
 Africa, 159-60 ; East, 246
 Agave, 204
 Agra, 134 ; population, 136
 Agram, 88
 Ahmadabad, 136
 Ahwaz, 128
 Airdrie, 50
 Air transport, 11
 Aix-la-Chapelle = Aachen
 Akassa, 176
 Akerman, 95
 Akyab, 142
 Alabama, 198
 Alais, 58
 Alaska, 26, 204</p> | <p>Albania, 111, 116
 Albany, W. Australia, 235
 Albert, Lake, 223
 Alberta, 190
 Albula, 80
 Albury, 223
 Alemtejo, 103
 Aleppo, 125
 Alessandria, 250
 Aleutian Islands, 245
 Alexandretta, 125, 251
 Alexandria (population), 162
 Alexandrina, Lake, 223
 Alexandrovsk, 92
 Alfa, 30, 164
 Algeria, 16, 164, 250
 Algiers, 246 ; population, 165
 Algoe Bay, 169
 Alicante, 248 ; population, 105
 Aliwal North, 168
 Alkali, 31
 Allahābād, 131 ; population, 136
 Allegheny, town, 202
 Allen, Lough, 35
 Alloa, 40
 All-spice, 24
 Almaden, 103
 Almelo, 66
 Almeria, 102, 103
 Almonds, 16
 Aloe fibre, 179
 Aloes, 180
 Alpaca, 18
 Alpine tunnels, 56, 73
 Alps, 56, 79</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

- Alsace, 59
 Altmühl, 69
 Altona, 76
 Aluminium, 51, 182
 Amalfi, 110
 Amazon, 210, 211
 Amber, 23
 Amboina, 145
 America, 180
 Amiens, 252 ; population, 60
 Amoy, 150
 Amposta, 101
 Amritsar, 136
 Amsterdam, 66
 Amu, 121, 128
 Anahuac, 204
 Ancona, 250 ; population, 110
 Andalusia, 103
 Andes, 18, 21, 209
 Andizhan (Andijan), 121, 255
 Angara, 118
 Angers, 61
 Angora goat, 18
 Angoulême, 248
 Animals, domestic, 18
 Annam, 140, 142
 Annapolis, 187
 Annatto, 24
 Anping, 159
 Antananarivo, 180
 Anthracite, 27, 197
 Anthracite, town, 190
 Antigua, 209
 Antilles, 207
 Antrim, 40
 Antwerp, 62, 64, 76, 252
 Anvers, 64
 Anzin, 58
 Apennines, 106
 Apia, 241
 Appalachian Mountains, 192, 194,
 195, 259
 Appenzell, 81
 Apples, 16
 Apuan Hills, 108
 Apulia, 107, 108
 Arabia, 126 ; ——— Felix, 126
 Araguaya, 210
 Arakân, 142
 Aral, Sea of, 121
 Arbroath, 49
 Arc, 250
 Archangel, 95
 Arctic Archipelago, 182
 Ardrossan, 39, 55
 Arezzo, 250
 Argentine Republic, 6, 11, 216 ; im-
 migration, 7
 Arizona, 199
 Arkansas River, 193
 Arlberg, 73, 81
 Arles, 249
 Armenia, 122
 Arno, 106
 Arrow-root, 22
 Artesian wells, 5, 233
 Arthur's Pass, 236
 Aruba, 209
 Ascension, 180
 Ashanti, 175
 Asia, 116
 Asia Minor, 123
 Asiut, 161, 162
 Asphalt, 28, 209
 Aspinwall, 206
 Assab, 179
 Assam, 130, 133
 Asses, 9
 Assiniboine, 184
 Assuan = Aswan
 Astrakhan, 92, 95, 256
 Asturian Mountains, 100
 Asuncion, 219
 Aswan, 162
 Atchison, Topeka, and Santa Fé
 Railway, 260
 Athabasca, Lake, 183
 Athens (population), 115
 Athlone, 35
 Atlanta (population), 200
 Atlas, High, 165 ; Little, 164 ;
 Mountains, 160
 Attar of roses, 113
 Auckland, 237
 Auckland Islands, 236
 Augsburg, 251 ; population, 74

- Augusta, 200
 Aussig, 85
 Australia, 11, 220-35
 Australian Alps, 221, 229
 Australian Commonwealth, 225 ;
 population, 225
 Austria, 81
 Avignon, 249
 Avila, 100, 248
 Avlona, 116
 Aylesbury, 37
 Ayr, 39, 47
 Ayrshire, 39 ; coalfield, 39
 Azerbaijan, 121
 Azof, 95
 Azores, 180, 247

 Bab-el-Mandeb, Strait of, 126
 Babylon, 125
 Bagamoyo, 178
 Baghdad, 126 ; railway, 251
 Bahamas, 25, 207, 209
 Bahia, 212
 Bahia Blanca, 218
 Bahr Yusuf, 160
 Bahrein Islands, 127
 Baikal, Lake, 119
 Baku, 121
 Bâle = Basel
 Balfrush, 128
 Bali, 145
 Balkan Mountains, 113
 Balkan Peninsula, 111-12
 Balkhash, Lake, 120
 Ballarat, 230
 Baltimore, 203, 261
 Baluchistan, 129
 Bamian Pass, 129
 Bananas, 21, 207, 209
 Banat, 90
 Banda Islands, 145
 Bandar Abbas, 128
 Banff, Canada, 190
 Bangalore, 136
 Bangkok, 141
 Banka, 28, 146
 Banks Peninsula, 238
 Bantus, 167

 Barada, 124
 Barbados, 28, 207, 209
 Barberton, 171
 Barcelona, 249 ; population, 105
 Barceilly, 136
 Bari, 110
 Barka, 163
 Barley, 15
 Barmen, 74
 Barnaul, 120
 Barnsley, 49
 Baroda, 136
 Barotseland, 172
 Barranquilla, 213
 Barrow, 50 ; population, 50
 Barrow River, 34
 Barter, 3
 Basel, 57, 81, 252
 Basque provinces, 103
 Basra, 126, 251
 Bassein, 142
 Bass Strait, 235
 Basutoland, 167, 170
 Batavia, 246 ; population, 144
 Bathurst, 231
 Batley, 47
 Batum, 121
 Bautzen, 74
 Bavaria, 17, 68
 Bayonne, 248
 Beans, 16
 Beaucaire, 57
 Bechuanaland, 167, 169
 Bechuanas, 169
 Beet, 17
 Beira, 172, 177
 Beirut, 124
 Belfast, 50, 55 ; population, 49
 Belfast, Victoria, 230
 Belgian Congo, 177
 Belgium, 62-65
 Belgrade, 88, 251
 Belize, 207
 Bell Island, 192
 Belt, Great and Little, 253
 Benares, 136
 Bencoolen = Benkulen
 Bendigo, 230

- Bengal, Bay of, 131
 Bengazi, 164
 Benguela, 177
 Benisaf, 165
 Benkulen, 145
 Benue, 174
 Berār, 133
 Berber, 179
 Berbera, 179
 Berbers, 164
 Bergen, Belg. = Mons
 Bergen, Norway, 96, 97; population, 98
 Berkeley Ship-Canal, 34
 Berlin, 69, 73; railways, 253, 254, 255
 Bermudas, 192
 Bern (population), 81
 Bernardino, 79, 109
 Besançon, 30; population, 61
 Bessarabia, 89
 Bewdley, 36
 Beyrout = Beirut
 Bhamo, 140
 Bhor Ghāt, 131
 Bhutān, 138
 Bilbao, 103, 105
 Biled-ul-jerid, 164
 Billingsgate, 53
 Billiton, 28, 146
 Birkenhead, 34, 39, 54
 Birmingham, 50, 51, 52
 Biscay, Bay of, 59
 Björneborg, 95
 Black band ironstone, 40
 Blackburn, 46
 "Black Country," 50
 Black Forest, 74, 251
 Black Hills, 199
 Black lead, 29
 Blantyre, 178
 Bloemfontein, 170
 Blubber-seals, 191
 Bludu, 176
 Bluefields, 207
 Blue Mountains, N.S.W., 230
 Bluff Harbour, 238
 Blyth, 38
 Bochum, 71
 Bœotia, 115
 Bogan, 223
 Bogotá, 213
 Bohemia, 17, 31, 85
 Bohemian Forest, 68
 Bokhara, 120, 121
 Boksburg, 171
 Bolan, 129
 Bolivia, 214, 215
 Bologna, 250; population, 110
 Bolton, 50; population, 46
 Boma, 177
 Bombay, 8, 136, 137
 Bona, 165
 Bonaire, 209
 Bones, 26
 Bo'ness, 40
 Bonin Islands, 155
 Bonn, 252
 Boracic acid, 108
 Borax, 138
 Bordeaux, 61, 248
 Borneo, 20, 146
 Bornu, 173
 Bosnia, 88
 Boston, U.S., 203, 259
 Botany Bay, 224
 Bothnia, Gulf of, 95
 Botzen = Bozen
 Bougie, 165
 Boulogne, 247
 Boyana, 116
 Bozen, 106
 Bradford (Wilts), 47
 Bradford (Yorkshire), 47, 48, 49, 50, 243
 Brahmaputra, 130, 155
 Braila, 89
 Braintree, 49
 Bratislava, 86, 251
 Braunschweig, 74
 Brazil, 211
 Brazil nuts, 212
 Bremen, 68; population, 76
 Bremerhaven, 76
 Brenner, 81, 254
 Brescia, 109

- Breslau, 69, 71, 255 ; population, 74
 Brezna, 114
 Brieg, 249
 Brindisi, 110, 250
 Brisbane, 232
 Bristol, 33, 34, 55 ; coalfield, 39 ;
 population, 53
 British Columbia, 186, 190, 261
 British Empire, 264
 British Honduras, 207
 British Isles, The, 32-56
 British North America, 182
 British North Borneo, 146
 Broken Hill, N.S.W., 231
 Broken Hill, S. Africa, 172
 Bromberg, 255
 Brooklyn, 260
 Broughton Bay, 159
 Bruges, 252 ; population, 64
 Bruni, 146
 Brünn, 86 ; population, 86
 Brunswick, 74
 Brusa or Brussa, 29, 124
 Brussels, 252 ; population, 64
 Bruxelles, 64
 Bucarest, 89
 Buckingham Canal, 132
 Budapest, 87
 Buen Ayre, 209
 Buenos Aires, 218, 247
 Buffalo, 195, 199, 259 ; population,
 201
 Bug, 92
 Buitenzorg, 145
 Bukovina, 89
 Bulak, 163
 Bulawayo, 172
 Bulgaria, 111, 113-14
 Bullock-waggon, 9
 Bunbury, 234
 Burdekin River, 232
 Burgas, 114
 Burgos, 248
 Burgundy, 250 ; Canal, 57 ; Gate, 81
 Burma, 142
 Burnley, 46
 Burntisland, 40
 Burra Burra, 233
 Burrard Inlet, 191
 Burton-on-Trent, 53
 Burutu, 176
 Bury, 46
 Bushire, 128
 Bussorah, 20, 126
 Butte, 199
 Cables, 165
 Cabinet woods, 25
 Cable, submarine, 11
 Cacao, 212
 Cadiz, 249 ; population, 105
 Cagliari, 111
 Cairo, 163 ; population, 162
 Calais, 247, 250 ; population, 61
 Calcutta, 136, 137
 Caledon, 170
 Caledonian Canal, 35
 Calgary, 190, 258
 Calicut, 131
 California, 16, 23, 196, 197, 199, 260,
 261 ; valley, 194, 196
 Caltanissetta, 108
 Cambodia, 140
 Cambrai, 60
 Camel, 9, 18
 Cameos, 108
 Cameroon, 176
 Camphor, 156, 159
 Campine, 62, 63
 Campos, 211
 Canada, 15, 182-91
 "Canada, garden of," 189
 Canadian Northern Railway, 257
 Canadian Pacific Railway, 184
 Canals, Eng., 34
 Canary Islands, 24, 180
 Canberra, 226
 Canmore, 190
 Cantabrian Mountains, 100, 103
 Canterbury Plains, 236, 238
 Canton, 150
 Cape Breton, 187
 Cape Coast Castle, 175
 Cape Province, 167
 Cape Town, 168, 169, 245, 247
 Cape to Cairo Railway, 256

- Cape Verde, 174
 Cape Verde Islands, 180
 Carácas, 213
 Caraways, 24
 Cardiff, 34, 39, 247 ; population, 49
 Carinthia, 81, 82
 Carlisle, 33
 Carlsbad, 86
 Carmarthenshire, 39
 Carnarvonshire, 37
 Carob beans, 125
 Carob-tree, 16
 Caroline Islands, 241
 Carpathians, 68
 Carpathian Mountains, 83
 Carriage, cost of, 8
 Carrickfergus, 37
 Carron, 50
 Carso, 87
 Cartagena (Spain), 103, 248 ; population, 105 ; (Colombia), 213
 Casablanca, 166
 Cashmere shawls, 135
 Cashmere wool, 155
 Caspian, 92
 Cassia, 24
 Castile, Old, 100
 Catalonia, 103
 Catania, 108 ; population, 111
 Catechu, 24
 Catskill Mountains, 194
 Cauca, 213
 Caucasasia, 121
 Cawnpore, 136
 Cayenne, 212
 Cayenne pepper, 24
 Ceará, 212
 Celebes, 144, 145
 Cenis, Mont, 56, 110, 250
 Central India, 133
 Central Plateau, France, 57
 Ceram, 145
 Cerro del Mercado, 205
 Cerro de Pasco, 214
 Cette, 57
 Ceylon, 137, 138
 Châlon (sur-Saône), 249
 Châlons (sur-Marne), 251
 Chambéry, 250
 Champlain, Lake, 198
 Chandernagore, 129
 Channel Islands, 16
 Charas, 138
 Charente, 61
 Charjui, 121
 Charleroi, 63, 64
 Charles River, 188
 Charleston, S.C., 203
 Charlottetown, 188
 Charters Towers, 232
 Chatham, 50
 Chatham Islands, 236
 Chaux de Fonds, La, 81
 Cheb, 86
 Chelyabinsk, 255
 Chemnitz, 74
 Chemulpho, 159
 Chengtu-fu, 153
 Chepstow, 34
 Cherbourg, 61, 248
 Chernavoda, 89
 Chesapeake Bay, 203
 Chiana, Val di, 250
 Chiasso, 252
 Chicago, 185, 259, 260, 261 ; population, 202
 Chick-peas, 16, 102
 Chicory, 17
 Chiengmai, 141
 Chile, 215
 Chili, Gulf of, 147
 Chillies, 24
 Chiltern Hills, 33
 Chilwa, Lake, 177, 178
 China, 147-53
 China-clay, 37, 52, 60 ; grass, 22
 Chinde, 177
 Chindwin, 141
 Chinese coolies, 8, 214
 Chinkiang, 150
 Chioggia, 110
 Chiromo, 174
 Chisinau, 89
 Chittagong, 137
 Chosen, 159
 Christchurch, 238

- Christiania, 96, 98
 Christiania Fjord, 96
 Christiansand, 98
 Christianstad, 97
 Christiansund, 98
 Christmas Island, 240
 Chubut, 217
 Chu-kiang, 151
 Chungking, 148 ; population, 150
 Cilician Gates, 123, 251
 Cinchona, 21, 133, 139, 144
 Cincinnati, 202
 Cinnabar, 103
 Cinnamon, 24, 139
 Cirenaica, 163
 Ciudad Bolivar, 213
 Civitavecchia, 110
 Cleve, 252
 Cleveland district, England, 38
 Cleveland, U.S., 201
 Cloncurry, 232
 Cloves, 24, 145
 Clyde, 32, 50
 Clyde basin, 39
 Clyde valley, 36
 Coal, 26
 Coal-tar dyes, 31
 Coaling stations, 246
 Coast Range, Canada, 185
 Coatbridge, 50
 Coblenz, 252
 Coca, 214
 Coganāda, 137
 Cochinchina, 140
 Cochineal, 24
 Cocoa, 21
 Coco-nut oil, 23, 139
 Cod fisheries, 191
 Coffee, 21, 144, 211, 212
 Cognac, 61
 Coir, 22
 Coire, 80
 Coke, 27
 Collie River, 234
 Cologne, 252 ; population, 75
 Colombia, 213
 Colombo, 139
 Colon, 206
 Colorado, 198
 Columbia, District of, 201
 Columbia River, 26, 194
 Columbia, town, 201
 Columbus, Georgia, 200
 Columbus, Ohio, 261
 Colza, 23
 Como, 108, 109, 252
 Comoro Islands, 180
 Concepcion Bay, 247
 Congo, 174
 Conquered Territory, 170
 Constantinople, 84, 251 ; popula-
 tion, 113
 Constantsa, 89
 Cook Islands, 240
 Cook Strait, 236, 237
 Coolgardie, 234
 Coolies, 8, 208
 Coorong, 223
 Copal, 23
 Copenhagen, 99
 Copiapo, 216
 Copra, 23, 239, 241
 Coquimbo, 216
 Coral, 25
 Cordoba (Arg. Rep.), 217, 219
 Cordoba (Spain), 101, 104, 249
 Corinth, Isthmus of, 114
 Cork, 25, 103
 Cork (town), 34, 55
 Cornwall, 29, 37, 50
 Coromandel, 129
 Coruña, 105
 Corunna, 103, 105
 Costa Rica, 206
 Côte d'Or, 249
 Cotswold Hills, 33
 Cotton, 19
 Cotton-seed oil, 23
 Courtrai, 63
 Coventry, 49
 Cracow, 78, 255
 Craiova, 89
 Crete, 114
 Creuzot, 58, 59, 60
 Crewe, 50
 Crimea, 94

- Cripple Crček, 198
 Croatia, 87
 Crow's Nest Pass, 186, 190, 191, 258
 Crystal, 31
 Cuba, 20, 208
 Cue, 234
 Cumberland, coalfield, 38
 Curaçao, 209
 Currants, 16
 Cutch, 24, 141
 Cuxhaven, 76
 Cyclades, 116
 Cyprus, 16, 125
 Czechoslovakia, 82, 85

 Dacca, 135
 Dahomey, 175
 Dairen, 119, 154, 255
 Dakkar, 174
 Dakota, North, 196 ; South, 199
 Dalmatia, 88, 112
 Dalny = Dairen
 Dal River, 97
 Damān, 129
 Damascus, 124, 252
 Dammar, 23
 Dannemora, 97
 Danube, 69, 84
 Danzig, 77
 Dar-es-Salām, 178
 Dariel, 122
 Darjiling, 133
 Darling, 223
 Darling Downs, 231
 Darlington, 10, 50
 Dartmoor, 33
 Darwin, 234
 Dates, 20, 164
 Dawson City, 191
 De Kaap, 171
 Dean, Forest of, 39
 Deccan, 130
 Dede Agach, 84
 Delagoa Bay, 169, 171, 177
 Delaware, 194
 Delaware Bay, 195
 Delft, 66
 Delgado, Cape, 177

 Delhi, 136
 Deli, 145
 Demerara, 212
 Denbigh, 39
 Denmark, 98 ; possessions, 263
 Denver, 260
 Derby, 50, 52 ; population, 49
 Derbyshire, coalfield, 39
 Deshima, 158
 Des Moines, 260
 Despeñaperros, Puerto de, 249
 Detroit, 259 ; population, 201
 Devon, 37, 50
 Devonport, 50
 Dewsbury, 47
 Dhārwar, 131
 Diamonds, 28, 168
 Diarbekr, 123, 124
 Dibrugarh, 130
 Diego Suarez, 180
 Dieppe, 248
 Dijon, 57, 249, 250 ; population, 61
 Dirschau, 255
 Diu, 129
 Dividing Range, 221, 223, 229, 230
 Divi-divi, 24
 Dnieper, 92
 Dniester, 92
 Dobruja, 89
 Dogger Bank, 53
 Dombrovo, 78
 Dominica, 209
 Domodossola, 249
 Don, Eng., 52 ; Russia, 92
 Donawitz, 82
 Donets, 93
 Dora Riparia, 56, 110
 Dordrecht, 67, 252
 Dortmund, 71 ; population, 75
 Douglas Island, 204
 Douro, 101
 Dover, 247, 250
 Draa, Wady, 166
 Drakenberg Mountains, 169
 Drammen, 98
 Drave, 84
 Drenthe, 65
 Dresden (population), 75

- Drohobycz, 78
 Droitwich, 37
 Drumouchter Pass, 33
 Dry farming, 5
 Dublin, 34; population, 55
 Dudley, 50
 Duluth, 185, 260, 261; population, 202
 Dumbarton, 35
 Dumfries, 47
 Dünaburg, 255
 Dünamünde, 94
 Dunbar, 32, 36
 Dundee, 49
 Dunedin, 238
 Dunfermline, 49
 Dunkirk, 61
 Durango, 205
 Durazzo, 116
 Durban, 170, 247
 Durham, coalfield, 38
 Düsseldorf, 253
 Dvinsk, 94, 255
 Dye-stuffs, 24
 Earthenware, 30
 Eastern Archipelago, 144
 Eastern Peninsula, 139
 East London, 169
 Ebro, 101
 Echuca, 230
 Ecuador, 213
 Edinburgh, 53
 Edmonton, 190, 258
 Eger, 85, 86
 Egypt, 160
 Egyptian Sudan, 163
 Eider-down, 25
 Eisenerz, 82
 Ekaterinburg, 94, 255
 Ekaterinoslaf, 92
 El Haza, 126
 Elba, 108
 Elbe, 69, 85
 Elberfeld-Barmen, 74
 Elbe-Trave Canal, 77
 Elbeuf, 60
 Elburz Mountains, 127
 Elche, 102
 Electricity, 6
 Elephant, 9
 Elizavetgrad, 256
 El Obeid, 162
 Elsinore, 99
 Emigration, 7
 Emilia, 110
 Enschede, 66
 Ensenada, 218
 Entrepôt trade, 45
 Entre Rios, 217
 Épernay, 61, 251
 Er Rif, 166
 Erie Canal, 195, 259
 Erie, town, 201
 Eritrea, 179
 Ermelo, 171
 Erzerum, 122
 Erzgebirge, 68, 71, 72, 85
 Erzincan, 122
 Esbjerg, 99, 248, 253
 Escout, 57, 62
 Eskimo, 181
 Eskishehr, 29
 Esparto, 30
 Essen, 74
 Esthonia, 90
 Estremadura, 103
 Etsch = Adige
 Euphrates, 125, 126
 Euphrates, Eastern, 90-91
 Europe, 31
 Evesham, 36
 Exchange, Rate of, 272
 Exeter, 33
 Exmoor Forest, 33
 Eyre, Lake, 232
 Falkirk, 50, 51
 Falkland Islands, 219
 Fall River, 200
 Falster, 98
 Falun, 97
 Fanning Island, 228, 240
 Fargo, 193
 Faroe Islands, 25, 99
 Fayum, 160

- Feathers, 25
 Fennel, 24
 Ferghana, 121, 256
 Fernie, 191
 Fez, 166
 Fezzan, 163
 Fife, 49
 Figs, 16
 Fiji Islands, 228, 240
 Finland, 95
 Fireclay, 37
 Firenze, 110
 Fishery products, 26
 Fishguard, 55
 Fitzroy River, Queensland, 232
 Fitzroy River, W. Australia, 235
 Fiume, 88, 111
 Flanders, West, 64
 Flax, 17, 49, 62
 Fleetwood, 55
 Flinders Range, 233
 Flint, 39
 Flint-glass, 31
 Florence, 108, 110, 250
 Florida, 29, 197
 Flowers, artificial, 31
 Flushing, 67, 248
 Fly River, 239
 Foggia, 250
 Folkestone, 247, 250
 Forest of Dean, 39
 Forfar, 49
 Formosa, 159
 Forth and Clyde Canal, 35
 Forth Bridge, 34
 Fort William, 189, 258, 261
 Foveaux Strait, 236, 238
 France, 56-62; possessions, 263
 Franconian Heights, 253
 Frankfurt-on-Main, 253; population, 75
 Fraserburgh, 53
 Fraser River, 26, 191
 Frasne, 249
 Fray Bentos, 219
 Fredericton, 188
 Freetown, 175
 Freiberg, 72
 Freiburg-im-Breisgau, 252
 Fremantle, 235
 French Congo Territory, 176
 Frisches Haff, 77
 Fuchow, 150
 Fulda, 69
 Fulton, 10
 Fundy, Bay of, 188
 Funen, 98, 253
 Furs, 117
 Fusan, 159
 Fyen, 98, 253
 Gablonz, 86
 Gafsa, 165
 Gainsborough, 50
 Galápagos, 214
 Galashiels, 47
 Galats, 89, 255
 Galle, 139
 Galveston, 208, 261
 Gambia, 174
 Gambier, 24
 Gamboge, 24
 Gand, 64
 Gandu, 173
 Ganges, 130, 137
 Ganges Canal, 132
 Garlic, 102
 Garonne, 56, 57
 Garry, 33
 Gateshead, 50
 Gävle, 97
 Geelong, 230
 Gelderland, 65
 Gellivara, 97
 Gelsenkirchen, 71
 Genesee, 200
 Geneva, 81
 Genoa, 110
 Georgetown, 212
 Georgia, Rep. of, 121
 German Economic Union, 67
 German Realm, 67-77; emigration, 7
 Ghâts, Eastern, 130
 Ghâts, Western, 130, 131, 133, 137
 Ghazni, 128

- Ghent, 64, 252
 Ghuznee = Ghazni
 Ghwalári, 128
 Gibraltar, 105, 246
 Gijon, 103, 105
 Gilbert Islands, 241
 Ginger, 24
 Ginseng, 159
 Gippssland, 229
 Girgenti, 108, 111
 Giridhi, 134
 Girvan, 36
 Glamorganshire, 33
 Glasgow, 46, 47, 50, 55
 Glass, 30
 Glen More, 35
 Glommen, 96
 Goa, 129, 131
 Gobi, 154
 Godāvari, 131, 137
 Gold, 28
 Gold Coast, 175
 Golden Horn, 113
 Golea, 164
 Goletta, 165
 Gombroon, 128
 Gomul, 128
 Good Hope, Cape of, ocean dis-
 tances by, 266
 Goole, 39
 Gorgonzola, 107
 Görlitz, 74
 Göta River, 96
 Gothenburg (Göteborg), 97
 Gottland, 98
 Gozo, 111
 Grahamstown, 169
 Grampians, 33
 Granada, 102 ; population, 105
 Grand Bassam, 175
 Grand Canal, 35
 Grand Trunk Pacific Railway, 258
 Grand Trunk Railway, 184
 Grangemouth, 40, 51
 Grantham, 50
 Grapes, 16
 Graphite, 29, 118, 136
 Gravesend, 54
 Graz, 82
 Great Barrier Reef, 220
 Great Belt, 99
 Great circle routes, 244
 Great Falls, 193
 Great Kei River, 169
 Great Northern Railway, U.S., 260
 Greece, 114
 Greenland, 181
 Greenore, 55
 Greenwich, rainfall, 35 ; time, 12
 Grenada, 209
 Grenoble, 59, 250
 Greymouth, 238
 Greytown, 207
 Grimsby, 39, 41 ; population, 53
 Griqualand West, 167
 Groningen, 66
 Ground-nuts, 23
 Guadalajara, Mexico (population),
 206
 Guadalaviar, 102
 Guadalquivir, 101
 Guadarrama, Sierra de, 100, 248
 Guadeloupe, 209
 Guadiana, 101
 Guaira, La, 213
 Guam, 204, 241
 Guano, 215
 Guatemala, 206
 Guayaquil, 214
 Guiana, 212
 Gums, 23
 Gutta-percha, 22, 143
 Gympie, 232
 Haarlem, 66
 Hague, The, 66
 Haidarābād, 134 ; population, 136
 Haidar Pasha, 123
 Haifa, 125
 Haifong, 142
 Hainaut, 63
 Haiphong, 141, 142
 Haiti, 208
 Hakodate, 158
 Halifax, Eng., 47
 Halifax, N.S., 185, 187, 261

- Halle, 74
 Halmahera, 146
 Halmstad, 97
 Hamburg, 68, 75, 76, 253
 Hamburg-Altona, 76
 Hamilton, Canada, 189
 Hamm, 253
 Hammerfest, 98
 Hangchow, 150, 151
 Hangö, 95
 Hankau = Hankow
 Hanko, 95
 Hankow, 151, 153
 Hanoi, 141; population, 143
 Hanover, 253
 Han River, 151
 Hanyang (Ch.), 149, 153; (Korea), 159
 Harbin, 154
 Harney Peak, 199
 Harrar, 179
 Hartlepool, The, 50
 Harwich, 53, 67, 248, 253
 Harz Mountains, 68, 71
 Hauran, 125
 Hausa, 175
 Havana, 208
 Havre, 61, 248; population, 61
 Hawaii, 261
 Hawaiian Islands, 241
 Hawick, 47
 Haza, El, 126
 Heckmondwike, 47
 Hejaz, 127
 Helsingfors, 95
 Helsinki, 95
 Hemp, 17
 Henequen, 22, 204
 Hengelo, 66
 Herat, 128
 Herberton, 232
 Heri Rud, 120, 128
 Hermoupolis, 115
 Hernösand, 98
 Hervey Bay, 220
 Hervey Islands, 240
 Hesse-Darmstadt, 75
 Hesse-Nassau, 71
 Heysham, 55
 Hides, 26, 30
 Himalayas, 129
 Hindu Kush, 129
 Hobart, 235
 Hobson's Bay, 229
 Hodeida, 127
 Hokkaido, 158
 Holland, 65-67
 Holyhead, 55
 Hondo, 155
 Honduras, 206
 Hongai, 143
 Hong-kong, 151, 246
 Honolulu, 13, 242, 247
 Honshiu, 155, 156
 Hoofs, 26
 Hooghly, 137
 Hook of Holland, The, 67, 248, 252, 253, 255
 Hoosac Mountains, 203
 Hops, 17, 36, 261
 Horn, Cape, 10, 216; ocean distances by, 266
 Hsian-fu, 153
 Huanchaca, 215
 Huddersfield, 47
 Hudson River, 10, 194, 195, 259
 Hudson's Bay, 182, 183, 185
 Huê, 142
 Huelva, 105
 Huertas, 101
 Hügli, 137
 Hull, 39, 41, 53; population, 50
 Humber, 34
 Hunan, 153
 Hungary, 86
 Hupeh, 157
 Huron, Lake, 182
 Husks, 19
 Hwang-ho, 148, 153
 Hwang-pu, 151
 Hyogo, 158
 Iberian Peninsula, 99
 Ibraila, 89
 Iceland, 25, 99
 Ichang, 148, 150
 Iconium, 123

- Iglau, 86
 Iglesias, 108
 IJmuiden, 66
 Ili, 120
 Illawarra, 231
 Illinois, 198, 199
 Immingham, 39
 India, 129-38
 Indian coolies, 8
 Indiana, 198, 199
 Indianapolis. 261 : population, 202
 Indigo, 24
 Indo-China, 139
 Indus, 130
 Invercargill, 238
 Iowa, 198
 Ipswich, 50
 Iquique, 216
 Irāwadi, 140, 142
 Ireland, 16, 32, 33 ; coal-mines, 40
 Irish Free State, 32
 Irish linens, 49
 Irkutsk, 119
 Iron, 27
 Iron Gate, 84
 Iron Knob, 227
 Iron ores, 71, 103 ; pyrites, 29
 Irrigation, 5
 Irish, 120
 Isère, 56, 250
 Isfahan, 128
 Iskenderun, 125
 Isbahan = Isfahan
 Issyk Kul, 120
 Italy, 16, 25, 106-11 ; emigration, 7 ;
 possessions, 263
 Ivory, 25, 163
 Ivory Coast, 175
 Ivory, fossil, 117
 Ivory, vegetable, 25

 Jade, 142
 Jaffa, 124
 Jagersfontein, 170
 Jahde, 77
 Jamaica, 208
 James River, 194
 Japan, 155-59

- Jassy, 89
 Java, 144, 228
 Jaxartes, 120
 Jedburgh, 47
 Jehlam, 138
 Jenil, 102
 Jerablus, 251
 Jerez, 102, 249
 Jerusalem, 125
 Jervis Bay, 226
 Jherria, 134
 Jibuti, 179
 Jidda, 127
 Jihlava, 86
 Jilolo, 146
 Johannesburg, 171
 Johor, 143
 Jucar, 102
 Julier Pass, 79
 Juneau, 204
 Jura, 56, 79, 249
 Jute, 22, 29, 133
 Jutland, 77, 98, 253

 Kabul River, 128
 Kabyles, 164
 Kaffirs, 167
 Kai-En Island, 191
 Kaiping, 152, 153
 Kalahari Desert, 169
 Kalgoorlie, 234
 Kamchatka, 155
 Kamerun = Cameroon
 Kanagawa, 158
 Kanats, 127
 Kandahar, 128
 Kangra, 133
 Kano, 176
 Kansas, 199
 Kansas City, 202
 Kansu, 154
 Kara Sea, 118
 Karāchi, 137
 Karakul sheep, 173
 Karharbāri, 134
 Karikal, 129
 Karizes, 127
 Karlovv Vari, 86

- Karlsbad = Carlsbad
 Karlsruhe, 252
 Karroos, 167
 Karst, 87
 Karun, 127
 Kashgar, 154
 Kashmir, 133, 138
 Kattegat, 99
 Kaulun, 152
 Kauri gum, 23, 237
 Kazanlik, 113
 Keewatin, 191
 Keighley, 47, 50
 Kelung, 159
 Kennet, 33
 Kentucky, 198
 Kenya, 178; — colony, 178
 Kerch, 95
 Kermadec Islands, 236
 Kerosene, 28
 Keweenaw, 199
 Khaibar Pass, 128
 Khândesh, 133
 Kharkof, 256; population, 94
 Khartum, 162, 163, 173, 179
 Khâtmandu, 138
 Kherson, 92, 95
 Khiva, 120
 Khojent, 121
 Khorat, 141
 Kiakhta, 119
 Kiangmai, 141
 Kiaochow Bay, 151
 Kicking Horse Pass, 258
 Kidderminster, 47
 Kief, 91, 94, 256
 Kiel, 76, 77
 Kiel Canal, 69, 77
 Kikuyu, 178
 Kilimanjaro, 178
 Kilindini, Port, 178
 Kilkenny, 40
 Kilmarnock, 47
 Kilung, 159
 Kimberley, 168, 169; District, 234
 King George's Sound, 234
 King Sound, 235
 Kingston, Canada, 184
 Kingstown, 55
 Kinlochleven, 51
 Kirin, 154
 Kirkcaldy, 40
 Kishinef, 89
 Kistna, 131
 Kiukiang, 150
 Kiushiu, 155
 Klagenfurt, 81, 254
 Klings, 143
 Klondyke, 191
 Knubs, 19
 Kobe, 158
 Koffyfontein, 170
 Kokand, 121
 Köln, 75
 Konia, 123, 251
 Königsberg, 77, 255
 Königshütte, 78
 Kopais, Lake, 115
 Kordofan, 163
 Korea, 159
 Kra, isthmus of, 143
 Kraiova = Craiova
 Krakau = Cracow
 Krasnovodsk, 121
 Krasnoyarsk, 119
 Krefeld, 74
 Krishna, 131
 Krivoi Rog, 94
 Kronstadt, 94
 Kroonstad, 170
 Kulpa, 84
 Kumaun, 133
 Kunene, 176
 Kur, 122
 Kurdistan, 122
 Kurile Islands, 155
 Kursk, 256
 Kustenji, 89
 Küstrin, 255
 Kwantung, 147
 Kyendwin, 141, 142
 Kyoto, 156, 158
 La Gnaira, 213
 La Paz, 215
 La Plata, estuary, 210, 217

- La Plata, town, 218
 La Rochelle, 61, 62
 Laaland, 98
 Labrador, 191
 Labuan, 146
 Lac, 25
 Lachine Canal, 183
 Lachlan, 223
 Lacquer, 156
 Ladrone Islands, 241
 Ladysmith, 170
 Lagos, 175, 176
 Lahore (population), 136
 Laibach, 87, 88
 Laikipia, 178
 Lancashire, 33 ; coalfield, 38
 Landes, 56
 Land routes, 247
 Langres, Plateau, 249
 Laokai, 141
 Laon, 252
 Larnaca, 125
 Larne, 56
 Latakia, 124
 Latvia, 90
 Latrobe, 235
 Launceston, Tasmania, 235
 Laurion, 115
 Lausanne, 81, 249
 Lead, 28
 Lead-ore, 37
 Leadville, 199
 Leather, 30
 Lebanon, Mount, 124
 Leeds, 33, 47, 48
 Leek, 49
 Leeward Islands, 209
 Leghorn, 110
 Leicester, 50, 53 ; population, 47
 Leicestershire, coalfield, 39 ; iron
 ores, 39
 Leiden, 66
 Leipzig, 75
 Leith, 40, 53
 Leixoes, 105
 Le Mans, 61
 Lemberg, 255
 Lemons, 16
 Lena, 118
 Leningrad, 92, 94, 256
 Lens, 58
 Leon, Mexico, 206
 Leon, Spain, 100
 Leopoldville, 177
 Lerwick, 53
 Lethbridge, 190
 Levkosia, 125
 Levuka, 240
 Lhasa, 155
 Liau-ho, 154
 Liautung Pen., 119, 152
 Libau, 94
 Liberec, 86
 Liberia, 175
 Libia italiana, 163
 Libourne, 248
 Libyan Desert, 160
 Licata, 111
 Lido, 110
 Liège, 62, 64
 Lignite, 27, 71, 85
 Liimfiord, 99
 Lille, 253 ; population, 60
 Lima, 215
 Lima-Oroya railway, 214
 Limasol, 125
 Limburg, 62
 Lime-juice, 209
 Limerick, 55
 Limoges, 60, 251
 Linares, 103
 Lincoln, 50
 Lincolnshire, 36 ; iron ores, 39
 Linnhe, Loch, 35
 Linseed, 17
 Linz, 82, 254
 Lisbon, 249 ; population, 105
 Lithuania, 91
 Liverpool, 8, 34, 39, 41, 46, 54, 257 ;
 population, 50
 Livorno, 110
 Ljubljana, 87, 88
 Llamas, 9
 Llanelly, 50, 51
 Llanos, 213
 Locle, 81
 Locusts, 16

- Eodz, 79, 256
 Loess, 147
 Lofoden Isles, 97
 Logwood, 24
 Loire, 57
 Lombardy, 109
 Lome, 175
 Lomond, Loch, 35
 London, 33, 46, 53, 54; railway connections with continent, 247, 250
 London, Canada, 189
 Londonderry, 55
 Long, Loch, 35
 Lorca, 102
 Lord Howe's Island, 230
 Lorraine, 59, 71
 Lötschberg tunnel, 79
 Louisiana, 21, 197
 Louisville, 193
 Lourenço Marques, 177
 Louvain, 253
 Low Islands, 240, 241
 Lowell, 200
 Lowestoft, 53
 Loyalty Islands, 239
 Lübeck, 77; population, 76
 Lucerne, 252
 Lu-chu Islands, 155
 Lucknow, 136
 Ludwig's Canal, 69
 Lugano, Lake, 252
 Lugau, 71
 Luleå, 97
 Lune, 33
 Luxemburg, 63, 67
 Luzon, 146
 Lyons, 60
 Lys, 62, 63
 Lyttelton, 238

 Maas, 66
 Macadam, 10
 Macao, 151
 Macassar, 145
 Macclesfield, 49
 Macedonia, 115
 Mackenzie dist., 186, 191

 Mâcon, 249, 250
 Madagascar, 180
 Madder, 24
 Madeira, 180
 Madeira River, 210
 Madras, 137; population, 136
 Madrid, 100, 248; population, 104
 Madura, 144
 Maffra, 229
 Magdalena, 213
 Magdeburg, 75, 253; population, 74
 Magellan, Straits of, 215, 216, 219
 Maggiore, Lake, 79
 Magyar, 82, 86
 Mahānadi, 131
 Mahé, 129
 Mahmudieh Canal, 162
 Mahogany, 25, 207
 Mahon, 105
 Maidstone, 52
 Maimachin, 119, 154
 Main, 69
 Mainz, 75, 252
 Maize, 15
 Majorca, 105
 Majunga, 180
 Malabar, 129
 Malacca, 143, 144
 Malaga, 102, 103, 249; population, 105
 Malamocco, 110
 Malay Archipelago, 144
 Malay Peninsula, 24, 140, 143
 Malines, 64
 Malmö, 253; population, 97
 Maloja, 79, 109
 Malta, 16, 111
 Malwa, 133
 Mammoth, 117
 Man, Isle of, 37
 Manar, Gulf of, 137
 Manchester, 41, 50, 54; population, 46; — Ship-Canal, 34
 Manchester, U.S., 200
 Manchuria, 119, 154
 Mandalay, 141
 Mandate, 111 n.
 Manganese, 29, 121

- Moldavia, 89
 Mollendo, 215
 Moluccas, 144, 145
 Mombasa, 178
 Money, 3
 Moneys of Account, 270
 Mongolia, 154
 Mongtse = Mengtse
 Monmouthshire, 33, 50
 Mons, 63, 64
 Monsoon regions, 5
 Monsoons, 116
 Mont Cenis, 56, 110, 250
 Montaña, 198, 214
 Montauban, 251
 Montenegro, 112
 Monterey, Mexico, 205
 Montevideo (population), 219
 Montreal, 183, 184, 188, 256; population, 189
 Montserrat, 209
 Moonta, 233
 Morava, 83
 Morava (March), 85
 Moravia, 85
 Moravian Gate, 68
 Moray Firth, 33
 Morecambe Bay, 55
 Morena, Sierra, 249
 Moresnet, 63
 Morley, 47
 Morocco, 165, 249
 Mosaics, 108
 Moscow, 94, 255; population, 94
 Moselle, 59, 70
 Mosul, 126, 251
 Mother-of-pearl, 25
 Motherwell, 50
 Motor vehicles, 11
 Moulmein = Maulmain
 Mount Bischoff, 235
 Mount Lofty Range, 233
 Mount Lyell, 235
 Mount Morgan, 232
 Mozambique, 177
 Mukden, 154
 Mules, 9
 Mulhouse, 60
 München, 75
 Munich, 68, 251; population, 75
 Murano, 108
 Murcia, 103, 104
 Murghab, 120
 Murray River, 223, 228
 Murrumbidgee, 223
 Murzuk, 163
 Muscat, 127
 Mustard, 24
 Myrobalans, 24
 Mysore, 133, 134; population, 136
 Mytho, 141
 Nagasaki, 158, 246
 Nagoya, 158
 Nāgpur, 136
 Nanaimo, 191
 Nancy, 59, 251; population, 61
 Nanking, 150
 Nantes, 61
 Naples, 250; population, 110
 Napoli, 110
 Naraguta, 176
 Narbadā, 131
 Narbonne, 249
 Nari, 129
 Narvik, 97
 Nashua, 200
 Natal, 169
 Natural gas, 199
 Nauru Island, 29, 240
 Nautical miles, 245; distances in, 266
 Navigator Islands, 240
 Neckar, 69, 251
 Negri Sembilan, 143
 Negro, Rio, 210
 Nejd, 126
 Nelson, Canada, 190
 Nelson River, 184
 Nepāl, 138
 Nera, 108
 Nerbudda, 131
 Nerchinsk, 119
 Netherlands, 65-67; possessions, 263
 Neuchâtel, 81

- Neva, 92
 Nevis, 209
 New Almaden, 199
 New Bedford, 200
 New Brunswick, 188
 New Caledonia, 239
 Newcastle, Eng., 50 ; population, 50
 Newcastle, Natal, 170
 Newcastle, N.S.W., 231, 233
 Newchwang, 154
 New countries, 7
 New England States, 195
 Newfoundland, 188, 191, 245
 Newfoundland, Grand Banks of, 26
 New Guinea, 144, 238
 Newhaven, Eng., 248, 250
 New Hebrides, 239
 New Jersey, 198
 New Orleans, 259 *n.*, 261 ; population, 203
 Newport, 39 ; population, 49
 New South Wales, 221, 227, 230 ; population, 225
 New Waterway, 67
 New Westminster, 191
 New York, 194, 197, 199, 257 ; population, 203
 New Zealand, 10, 11, 227, 228, 236-38 ; population, 225 ; flax, 237
 Niagara, 199, 259
 Niagara, Falls of, 183
 Nicaragua, 206
 Nicolaief, 95
 Nicosia, 125
 Niger, 173, 176
 Nigeria, 175
 Niigata, 158
 Nijmegen, 252
 Nile, 160
 Nile, Blue, 163
 Nile, White, 163
 Nilgiri Hills, 133
 Nîmes, 249
 Nineveh, 126
 Ningpo, 150
 Nippon, 155
 Nish, 83
 Nitrate of soda, 29, 214, 215
 Niuchwang, 154, 255
 Nizhniy-Novgorod, 94
 Nome, 204
 Nonni, 154
 Nord Express, 253
 Norfolk, 37
 Norfolk, Va., U.S., 203, 247
 Norfolk Island, 228, 230
 Norrköping, 97
 North America, 181 ; railways, 256
 Northampton, 53
 Northamptonshire, iron ores, 39
 Northern Caucasias, 121
 Northern Pacific Railroad, 260
 Northumberland, coalfield, 38
 Norton Sound, 204
 Norway, 25, 95-98 ; possessions, 263
 Norwich, 53
 Nottingham, coalfield, 39 ; population, 46
 Noumea, 239
 Nova Scotia, 186, 187, 245
 Novorosiisk, 122
 Numea, 239
 Nuremberg, 75, 253 ; population, 74
 Nürnberg, 74
 Nutmegs, 24, 145
 Nyasa, Lake, 174, 177
 Nyasaland Prot., 167, 177
 Oahu, 242
 Oakland, 260
 Oats, 15
 Ob, 117, 118
 Oberhausen, 253
 Ocean distances, 266
 Ocean Island, 29, 240
 Ochakof Bar, 95
 Odenwald, 253
 Oder, 69
 Odessa, 255, 256 ; population, 95
 Ofoten Fjord, 97
 Ogden, 260
 Ohio, State, 198, 199
 Ohio River, 193
 Oil-cake, 23
 Oil shale, 37, 227
 Oka, 94

- Okhotsk, Sea of, 119
 Oklahoma, 199
 Oldham, 8, 50 ; population, 46
 Olive-oil, 22
 Omaha, 260 ; population, 202
 Oman, 127
 Omsk, 119
 Ontario, 189
 Opals, 28
 Opava, 86
 Opium, 20, 133
 Oporto, 105
 Oran (population), 165
 Orange Free State, 167, 170
 Orange River, 168
 Oranges, 16, 209
 Oregon, 261
 Orenburg, 121, 255 ; population, 92
 Orient Express, 251
 Orinoco, 209, 210, 212
 Orléans, 57, 61, 248, 251 ; population, 61
 Oruro, 215
 Osaka = Ozaka
 Ostend, 64, 247
 Ostend-Vienna express, 253
 Ostrich feathers, 25, 168
 Otago, 238
 Otavi, 172
 Ottawa, 182, 184, 189
 Oudh, 134
 Ouenza, 165
 Ouse, 34
 Overijssel, 65
 Owari Bay, 158
 Owen Stanley Range, 238
 Oxelösund, 97
 Oxus, 120
 Ozaka, 158
 Ozokerit, 28

 Padang, 145
 Pago-pago, 241
 Pahang, 143
 Paisley, 46
 Palermo, 110
 Palm-oil, 23, 175, 177
 Palma, 105
 Palos, 105
 Pambam Passage, 137
 Pamir, 120, 128, 154
 Panama, 206
 Panama Canal, 10, 206, 262 ; ocean distances, 266 ; shipping through, 268
 Pancorbo, 248
 Paper, 30
 Papua, 238, 239
 Pará, 210 ; population, 212
 Paraffin, 28
 Paraguay, 219
 Paraguay, River, 210
 Paraná, 210, 217, 219
 Paris, 60 ; railways, 248
 Parmesan cheese, 107
 Paros, 115
 Parramatta River, 231
 Passau, 82, 253
 Patagonia, 217
 Paterson, 201
 Patna, 133 ; population, 136
 Patras, 115
 Pauillac, 61
 Paumben Passage, 137
 Paysandu, 217, 219
 Paz, La, 215
 Pearl-fisheries, 139, 234
 Pearl River, 151
 Pearls, 25
 Pearl-shell, 25, 239
 Peas, 16
 Pechili, Gulf of, 147, 148, 154
 Pecs, 86
 Pei-ho, 152
 Peking, 255 ; population, 153
 Pelew Islands, 241
 Pelotas, 212
 Pemba, 179
 Pembroke, 50
 Penang, 143, 144
 Pennine Chain, 33
 Pennsylvania, 198, 199
 Penrhyn Island, 240
 Pensacola, 197, 203
 Pentland Firth, 35
 Pepper, 23, 133

- Perak, 144
 Perm, 92, 118, 255
 Pernambuco, 211, 212
 Pernik, 114
 Pershore, 36
 Persia, 127
 Persian Gulf, 125, 128
 Perth, W. Australia, 235
 Peru, 214
 Peruvian bark, 21
 Peshāwar, 128
 Peterhead, 53
 Petrograd, 92, 94, 256
 Petroleum, 27, 121, 141
 Petřofsk, 256
 Philadelphia, 198, 203, 259, 260 ;
 population, 203
 Philippeville, 165
 Philippine Islands, 20, 22, 146, 204
 Philippopolis, 114
 Phosphates, 29, 165
 Phosphorite, 103
 Piacenza, 250
 Pietermaritzburg, 170
 Pilchards, 53
 Pilsen, 86
 Pimento, 24
 Pine-apples, 21
 Pine-barrens, 197
 Piræus, 115
 Pisa, 250
 Pishin, 129
 Pittsburgh, 193, 198, 199, 259, 261 ;
 population, 202
 Plate, River, 210, 218
 Platinum, 29
 Ployeshti, 89
 Plums, 16
 Plymouth, 33 ; population, 50
 Plzen, 86
 Po, 106
 Pocahontas, 247
 Poitiers, 248
 Pola, 110
 Poland, 78
 Polders, 65
 Polynesia, 240
 Polynesians, 224
 Pondichéry, 129
 Pondoland, 169
 Pontevedra, 105
 Poona, 131
 Poppy-seed, 23
 Porcelain, 30, 74
 Pori, 95
 Port Arthur, Canada, 189
 Port Arthur, Liautung Peninsula, 152
 Port Augusta, 233
 Port Chalmers, 238
 Port Dalrymple, 235
 Port Darwin, 228
 Port Elizabeth, 169
 Port Florence, 178
 Port Huron, 259
 Port Jackson, 230
 Port Moresby, 239
 Port Natal, 170
 Port Nelson, 185
 Port Nicholson, 237
 Port Nolloth, 168
 Port Phillip Bay, 229
 Port Pirie, 231, 233
 Port Said, 246
 Port Swettenham, 144
 Port Weld, 144
 Portal, 259
 Portillo, 216
 Portland, Maine, 185, 259 ; popula-
 tion, 204
 Portland, Oregon, 195, 204, 260
 Portland, Victoria, 230
 Porto Alegre, 212
 Porto Cabello, 213
 Porto Novo, 175
 Porto Praya, 180
 Porto Rico, 204, 208
 Portsmouth, 50
 Port Sudan, 179
 Portugal, 104 ; possessions, 264 ;
 railway gauge, 248 *n.*
 Posen, 78, 79 ; population, 79
 Potash, 31
 Potatoes, 16
 Poti, 121
 Potomac, 194
 Potosi, 215

- "Potteries," The, 52
 Prague, 77, 85, 86, 254
 Praha = Prague
 Precious stones, 28
 Predeal, Pass of, 88
 Pregel, 77
 Pressburg, 86
 Preston, 46
 Pretoria, 170, 171
 Prince Albert, 190, 258
 Prince Edward Island, 188
 Prince of Wales Islands, 221
 Prince Rupert, 191, 257, 258
 Prince's Island = Principe
 Principe, 180
 Progreso, 206
 Prome, 141
 Prunes, 16
 Prussia, East, 23
 Puebla, 206
 Puerto Cabello, 213
 Puerto Limon, 207
 Puerto Mexico, 205
 Puerto Montt, 216
 Puerto Rico = Porto Rico
 Puget Sound, 195, 196, 197, 203,
 245, 260
 Pulque, 204
 Pulses, 16
 Pungwe, 177
 Punjab, 133, 134
 Puno, 215
 Pushtas, 84, 86
 Pyrenees, 56, 100, 248; railways,
 249, 251

 Quadrant, 245
 Quebec, province, 188; town, 188,
 189, 257
 Queenborough, 54, 248, 250
 Queensferry, 34
 Queensland, 226, 227, 231; popula-
 tion, 225
 Queenstown, 56
 Quetta, 129
 Quicksilver, 29, 103
 Quilimane, 177
 Quito, 213
- Rabat, 166
 Rabba, 174
 Rabbits, 226
 Railways (table), 265
 Rainy, Lake, 184
 Raisins, 16
 Rājputāna, 133
 Rand, The, 171
 Rangoon, 139, 142; population, 141
 Rāniganj, 134
 Rape-seed, 23
 Rarotonga, 240
 Rate of Exchange, 272
 Ratisbon, 69, 253
 Rattans, 22
 Redditch, 50
 Red River, 190
 Red River (of the North), 184, 193
 Refrigeration, 11
 Reggio (Calabria), 110
 Reggio (Emil.), 110
 Regina, 190, 259
 Regnitz, 69
 Reichenberg, 86
 Reikjavik, 99
 Reims, 61
 Reindeer, 9
 Remscheid, 74
 Renmark, 233
 Resht, 128
 Resins, 23
 Réunion, 24, 179
 Reuss, 79
 Reval, 90, 94
 Rhine, 69
 Rhineland, 71
 Rhodesia, 167, 171
 Ribble, 33
 Rice, 21
 Richmond, Va., U.S., 203
 Rideau, 184
 Rif, Er, 166
 Riga, 90, 256; population, 94
 Rio Grande do Sul, 212
 Rio Janeiro, 211, 212
 Rio Negro, 210
 Rio Tinto, 103
 Riu-kiu Islands, 155

- Riverina, 230
 "Roaring forties," 10
 Rochdale, 46, 47
 Rochester, U.S., 200
 Rockhampton, 232
 Rocky Mountains, 181, 193, 259 ;
 Gate of, 193 ; Park, 190
 Rome, 250 ; population, 109
 Rosario, 217 ; population, 219
 Rosetta, 162
 Rosin, 23
 Rossland, 190
 Rosslare, 55
 Rostock, 77
 Rostof, 95
 Rosyth, 50
 Rotterdam, 76, 248, 252, 253 ;
 population, 66
 Rotumah, 240
 Roubaix, 60
 Rouen, 60, 61
 Roumania, 15, 88-90
 Royal Canal, 35
 Rubber, 22, 139, 141, 163, 177, 212
 Rubies, 28, 142
 Rügen, 77
 Ruhr, coal-basin, 71, 74
 Runcorn, 54
 Ruo, 174
 Russia, 91-95 ; possessions, 264 ;
 railway gauge, 248 n.
 Rye, 15

 Saar, coalfield, 58, 71
 Sabinas, 205
 Sacramento, 196
 Saffi, 166
 Sago, 22, 146
 Sahara, 164
 Sailers, 244
 Sailing ship routes, 9
 St. Anthony, Falls of, 193, 200
 St. Christopher, 209
 St. Clair River, 259
 St. Cloud, 60
 St. Dié, 60
 St. Etienne, 58 ; population, 60
 St. Gall, 81

 St. Gothard, 73, 79, 109, 252
 St. Helena, 180
 St. Helens (population), 52
 St. Ives, 105
 St. John, 183, 257
 St. John's, 192
 St. John's River, 169
 St. Kitts, 209
 St. Lawrence, 182, 183
 St. Louis, U.S., 195, 261 ; popula-
 tion, 202
 St. Louis, West Africa, 174
 St. Lucia Bay, 170
 St. Lucia, W. Indies, 209, 247
 St. Martin, 209
 St. Michael, 247
 St. Nazaire, 62
 St. Paul, 260 ; population, 202
 St. Quentin, 60
 St. Roque, 247
 St. Thomas, 21, 209, 247
 St. Thomas (Africa), 180
 St. Vincent, 180, 246
 St. Vincent (W. Ind.), 209
 St. Vincent, Gulf of, 233
 Sala, 97
 Salina Cruz, 205
 Salisbury, 172
 Salmon, canned, 26
 Salonika, 83, 88, 112, 251 ; popula-
 tion, 115
 Salt, 29, 82
 Salt Hills, 134
 Salto, 217
 Saltpetre, 134
 Salwin, 140, 142
 Salzburg, 251
 Salzkammergut, 82
 Samara, 255
 Samarkand, 120, 121, 255
 Sambre, 63
 Samoan Islands, 204, 240, 241
 Samsun, 124
 Sana, 127
 Sandakan, 146
 Sandarach, 23
 San Francisco, 194, 247, 260 ; popu-
 lation, 203

- San Joaquín, 196
 San Luis Potosi, 206
 Sanpo, 155
 San Salvador, 206
 San Salvador, town, 212
 Santa Fé, Arg. Rep., 217
 Santa Fé, U.S., 261
 Santander (population), 105
 Santiago, Chile, 216
 Santiago Island, 180
 Santiago de Cuba, 208
 Santo Domingo, 208
 São Francisco, R., 210
 Saône-Rhone valley, 57, 61
 Sapphires, 28
 Saragossa, 100, 104
 Saratof, 94
 Saráwak, 146
 Sardinia, 108, 111
 Sarnia, 259
 Sarre, coalfield, 58, 71
 Saskatchewan, province, 190
 Saskatchewan, River, 184
 Sault Ste. Marie, 183, 185, 259
 Savaii, 241
 Savannah, 203
 Save, 84, 111
 Savona, 110
 Sawákin, 179
 Saxony, 71
 Scania, 97
 Scheldt, 57, 62
 Schiedam, 67
 Schneidemühl, 255
 Schönebeck, 72
 Schoonen, 97
 Scotland, 32
 Scutari, 116
 Seattle, 196, 260
 Sebastopol, 95
 Sechwan, 147, 149
 Sedan, 60
 Seeland, 98, 253
 Segovia, 100
 Seihun, 124
 Seine, 57
 Sekondi, 175
 Selangor, 143
 Selenga, 119
 Selkirk, 47
 Semipalatinsk, 120
 Semmering, 81, 254
 Senegal, 173
 Sennar, 163
 Sénones, 60
 Seoul, 159
 Sepik River, 239
 Seraing, 64
 Serb, 87
 Seret, 89
 Seriphos, 115
 Serowe, 169
 Sesame, 23
 Sesia, 106
 Setubal, 105
 Sevastopol=Sebastopol
 Severn, 34
 Seville, 101, 103, 249; population
 105
 Sèvres porcelain, 60
 Seychelles, 179
 Sfax, 164, 165
 Shanghai, 150, 151, 246
 Shannon, 35
 Shansi, 153
 Shan States, 138
 Shantung, 147, 151, 153
 Shap Fell, 33
 Sharpness, 34
 Shasi, 150, 151
 Shat-el-Arab, 125, 128
 Sheep (as beasts of burden), 9
 Sheerness, 50
 Sheffield, 52; population, 50
 Sherbro, 175
 Shields, South, 52
 Shikoku, 155
 Shipka Pass, 112
 Shipping table, 270
 Shiraz, 128
 Shire, 174, 177
 Shoa, 179
 Shotts, 165
 Shropshire, coalfields, 39
 Siam, 139, 142
 Sian-fu, 153

- Siberia, 92, 116-20
 Siberian railway, 117, 118, 255, 256
 Sibi, 129
 Sicily, 16, 107, 110
 Sidon, 124
 Sidra, Gulf of, 163
 Sierra Leone, 175
 Sierra Morena, 249
 Sierra Nevada, Spain, 101
 Sierra Nevada, U.S., 199
 Sierra Nevada de Santa Marta, 213
 Si-kiang, 147, 148, 149, 151
 Sikkim, 138
 Silesia, 69; coalfields, 71
 Silesia, Austrian, 85
 Silk, 18; — artificial, 30
 Silver, 28, 72, 205
 Silverton, 231
 Simplon, 79, 109, 249, 252
 Sinai, 126
 Sind, 129
 Singan-fu, 153
 Singapore, 143, 144, 246
 Singareni, 134
 Sinhalese, 139
 Sinope, 124
 Sir, 120
 Sisal hemp, 22, 209
 Sisek, 84
 Skagway, 191
 Skins, 30
 Slate, 37
 Slovakia, 85
 Slovene, 87
 Smolensk, 255, 256
 Smyrna, 16, 124; population, 123
 Snake River, 194
 Soap, 31
 Society Islands, 240
 Socotra, 179
 Soda, 31
 Soda, nitrate of, 214, 215
 Söderhamn, 97
 Soest, 253
 Sofia, 114
 Sókoto, 173
 Sokotra = Socotra
 Solingen, 74
 Solomon Islands, 239
 Somaliland, 179
 Somme, River, 57
 Song-koi, 140, 141, 143
 Sound, The, 99, 253
 South Africa, Union of, 167
 South America, 209-11
 Southampton, 53, 55, 248, 250
 South Australia, 226, 228, 232;
 population, 225
 Southern Alps, 236
 Southern Pacific Railway, 260, 261
 Southern Uplands, 33
 Spain, 16, 99-105; emigration, 7;
 possessions, 264; railway gauge,
 248 n.
 Spalato, 88
 Spelter, 29
 Spencer Gulf, 233
 Sperm-oil, 26
 Spessart, 253
 Spey, 33
 Spezia, 110
 Spice Islands, 145
 Spitalfields, 49
 Spitsbergen, 98
 Splügen Pass, 79, 109
 Spokane, 200
 Spoleto, 108
 Sponges, 25
 Spree, 73
 Srinagar, 138
 Stafford, 53
 Staffordshire, 52; coalfields, 39
 Stanley Falls, 174
 Stanley Pool, 174
 Stanthorpe, 232
 Stassfurt, 72, 74
 Stavanger, 98
 Steamer routes, 244-47
 Steel, 27
 Stelvio Pass, 106
 Steppes, 93
 Stettin, 69, 77, 254; population, 76
 Stewart Island, 236
 Steyr, 82, 254
 Stockholm, 97

- Stockport, 46
 Stockton, 10; population, 49
 Stoke, 52
 Stoke Prior, 37
 Stourbridge, 50, 52
 Stracchino, 107
 Straits Settlements, 140, 143
 Stralsund, 77
 Stranraer, 56
 Strasbourg, 57, 61, 251, 252;
 population, 61
 Straw-plaiting, 109
 Stroud, 47
 Stroud Valley, 48
 Stuttgart, 251; population, 74
 Suakin, 179
 Suchau = Suchow
 Suchow, 151
 Sudbury, 186
 Sudetes, 68
 Suez Canal, 10, 136, 162, 228, 246,
 252, 262; ocean distances by,
 266; shipping through, 267
 Sugar-beet, 17
 Sugar-cane, 21
 Sulina, 84
 Sulphur, 29
 Sultana raisins, 16
 Sulu Archipelago, 146
 Sumach, 24
 Sumatra, 20, 144, 145
 Sunda Islands, 144
 Sunderland, 38; population, 49
 Sundsvall, 97
 Superior, Lake, 189, 198
 Superior, town, 260, 261; popula-
 tion, 202
 Surabaya, 145
 Surinam, 212
 Susa, 165
 Susquehanna, 194
 Suva, 13, 240
 Swakopmund, 172
 Swan River, 235
 Swansea, 39, 50
 Swatow, 150
 Sweden, 95-98
 Swindon, 50
 Swinemünde, 76
 Switzerland, 45, 79-81
 Sydney, N.S., 188
 Sydney, N.S.W., 228, 230, 231
 Syria, 124
 Syros, 115
 Szeged, 86, 87
 Tabriz, 127
 Tacna, 216
 Tacoma, 195, 260
 Taflet, 20
 Taganrog, 94; population, 95
 Tagus, 101
 Tahiti, 241
 Taipei, 159
 Taiwan, 159
 Tajurra, 179
 Takau, 159
 Tallinn, 94
 Tamar, Tasmania, 235
 Tamatave, 180
 Tampico, 206
 Tangier, 165
 Tanjong Priok, 145
 Tanjore, 136
 Tanning materials, 24
 Tapajos, 210
 Tapioca, 22
 Tāpti, 133
 Tarascon, 249
 Tarifa, 105
 Tarim, 154
 Tarkwa, 175
 Tarragona, 105
 Tashkent, 255; population, 120
 Tasmania, 228, 235; population,
 225
 Tasselot, Mont, 249
 Taunton, 33
 Taunus, 70
 Taurus, 123
 Tavoy, 142
 Taxes, 13
 Tay Bridge, 34
 Tea, 20, 144
 Teak, 25, 141
 Tees, 37, 50

- Teheran, 127
 Tehuantepec, Isthmus, 205; rail-
 way, 261
 Tejen, 121
 Telford, 10
 Tell, 164
 Teluk Anson, 144
 Tenasserim, 142
 Tennessee, River, 193
 Tennessee, State, 198
 Ternate, 145
 Terni, 108
 Tetuan, 166
 Texada Island, 191
 Texas, 181, 199
 Textiles, 29
 Thāl Ghāt, 131
 Thames, 33
 Thames, New Zealand, 237
 Tharsis, 103
 Theiss, 84
 Thessaly, 115
 Thorn, 255
 Thursday Island, 221
 Tiber, 106
 Tibet, 155
 Ticino, 79, 106, 252
 Tidore, 146
 Tientsin, 150, 255
 Tierra del Fuego, 215, 216
 Tiflis, 122
 Tigris, 125
 Tilburg, 66
 Tilbury, 54
 Timber, 24
 Timbaktu, 175
 Time, differences in, 12
 Time-standards, North America, 185
 Timor, 144
 Tin, 143, 146
 Tin ore, 37
 Tinplate, 28
 Tirol, 73
 Tisa, 84, 86
 Titicaca, Lake, 214, 215
 Tlemsen, 165
 Tobacco, 20
 Tobago, 209
 Tobol, 118
 Tobolsk, 119
 Tocantins, 210
 Toce, Rio, 249
 Togoland, 175
 Tokay, 84, 87
 Tokyo, 156, 158
 Toledo, U.S., 201
 Tom, 118
 Tomsk, 119
 Tonga Island, 240
 Tong-king, 140, 142
 Tonnage, 267 *n.*
 Tönsberg, 98
 Toowoomba, 232
 Torino, 110
 Toronto, 189
 Torres Strait, 220, 231
 Tortoise-shell, 22
 Tortosa, 101
 Toulouse, 56, 61, 251; population,
 61
 Tourane = Turan
 Tourcoing, 60
 Tours, 61, 248; population, 61
 Townsville, 232
 Trade routes, 242-62
 Trade-winds, 4
 Train-ferries, 247 *n.*, 251, 253
 Train-oil, 26
 Trans-Caspian railway, 121
 Transkeian Districts, 169
 Transvaal, 168, 171
 Transylvania, 90
 Travemünde, 77
 Trebizond, 122, 127
 Trengganu, 143
 Trent, 34
 Trent and Mersey Canal, 52
 Trepan, 239
 Trichinopoly, 136
 Trieste, 249, 254; population, 110
 Trinidad, 21, 28, 209
 Trincomali, 139
 Tripolitania, 163
 Trnovo, 114
 Tromsø, 98
 Trondhjem, 96, 98

- Troon, 39
 Troppau, 86
 Trowbridge, 47
 Troy, 194, 195
 Troyes (population), 60
 Truxillo, 207
 Tsaritsyn, 92
 Tsitsihar, 154
 Tsugaru Strait, 155, 158
 Tucuman, 219
 Tunis (protectorate), 164; population (town), 165
 Tunja, 113
 Turan, 142
 Turia, 102
 Turin, 106, 249, 250; population, 110
 Turkistan, Chinese, 154
 Turku, 95
 Turpentine, 23
 Turtle Islands, 214
 Tuscany, 109
 Tuticorin, 137
 Tutuila, 241
 Tuxpan, 205
 Tweed basin, 48
 Tyne, 50
 Tyre, 124
 Tyrol = Tirol
 Tyumen, 92, 118

 Ubangi, 174, 176
 Udi, 176
 Udine, 81
 Uganda, 178
 Ujiji, 178
 Ukraine, 91, 93
 Ulm, 69, 251
 Umtali, 172
 United Kingdom, coal export, 43; emigration, 7; possessions, 264
 United Provinces, 133, 134, 136
 United States, 6, 192-204; arid region of, 196; immigration, 7
 Upolu, 241
 Upsala, 97
 Ural Mountains, 92, 93
 Urga, 154

 Uruguay, 219
 Uruguay River, 217
 Uspallata, 216
 Ust Dvinsk, 94, 255
 Usti, 85
 Usuri, 119
 Utrecht, 253; population, 66

 Vaasa, 95
 Valence, 249
 Valencia, Spain, 102, 104; population, 105
 Valencia, Venez., 213
 Valenciennes, 60
 Valenza, 106
 Valetta, 111
 Valladolid, 248; population, 104
 Valona, 116
 Valonia, 24
 Valparaiso, 216
 Vancouver Island, 186, 191
 Vancouver, town, 191, 228, 245, 256, 259, 261
 Vanilla, 24, 179, 205
 Van Reenen's Pass, 170
 Vardar, 83, 84
 Varna, 114
 Vasa, 95
 Vegetable Creek, 231
 Vener, Lake, 96
 Venetia, 110
 Venezuela, 212
 Venice, 108, 249, 254; population, 110
 Vera Cruz, province, 205
 Vera Cruz, town, 206
 Verona (population), 110
 Verviers, 63, 64
 Vetter, Lake, 96
 Viatka = Vyatka
 Victoria, B.C., 191
 Victoria Falls, 172
 Victoria, Lake, 173, 178
 Victoria Nyanza = Victoria, Lake
 Victoria, State, 226, 228; population, 225
 Vicuña, 18, 214
 Vienna, 253; population, 82

- Vienne, 249
 Vigo, 105
 Vilna, 91, 255
 Vindava, 256
 Virgin Islands, 204, 209
 Visby, 98
 Vistula, 69
 Viti Levu, 240
 Vladikafkas, 92, 122
 Vladivostok, 119, 255
 Vlissingen, 67
 Vojvodina, 87, 88
 Volga, 92
 Vologda, 255
 Volos, 115
 Vosges, 56, 251
 Vryburg, 169, 172
 Vyatka, 255

 Wabash, 193
 Wady Halfa, 160, 162, 173
 Wakamatsu, 157
 Wales, 32; coalfields, 39
 Wallachia, 89
 Wallaroo, 233
 Walsall, 50
 Walvis Bay, 167
 Wankie, 172
 Wardhā, 133
 Wargla, 164
 Warrnambool, 230
 Warsaw, 78, 255
 Warwickshire, coalfield, 39
 Washington, city, 201
 Washington, State, 196, 261
 Waste silk, 19
 Waterford, 34, 55
 Water-power, 7
 Wax, 25
 Wear, 50
 Wei-hai-wei, 151
 Wei-ho, 153
 Welland Canal, 183
 Wellesley, Province, 143
 Wellington, New Zealand, 245;
 population, 237
 Wenchow, 150
 Werra, 69

 Weser, 69
 West Africa Prot., 172
 Western Australia, 234; popula-
 tion, 225
 West Indies, 10, 16, 207
 Westphalia, 71
 Westport, 238
 West River, 147
 Wheat, 14
 Whitehaven, 38
 White Pass, 191
 Whitstable, 53
 Wick, 53
 Widnes, 52
 Wieliczka, 78
 Wiesbaden, 70, 252
 Wilhelmshaven, 77
 Willamette, 195
 Wilmington, Del., 203
 Wilmington, N.C., 203
 Wilton, 47
 Wilts, 47
 Wimmera, 229
 Windau, 256
 Windhuk, 172
 Windsor, Canada, 259
 Windward Islands, 209
 Wine, 16
 Winnipeg, Lake, 183, 258
 Winnipeg, town, 258; population,
 190
 Winnipegosis, Lake, 190, 258
 Wisby, 98
 Witwatersrand, 171
 Wollongong, 231
 Wolverhampton, 50
 Wönsan, 159
 Wood-pulp, 30
 Woods, Lake of the, 182, 258
 Wool, 18
 Worcester, 52
 Worcestershire, coalfield, 39
 Workington, 38, 50
 Wuchang, 150
 Wusung, 151, 152

 Xerez (de la Frontera)= Jeréz
 Xingu, 210

Yak, 9	Yugoslavia, 82, 87
Yakutsk, 119	Yukon, 204
Yanaon, 129	Yukon, ter., 191
Yangtse-kiang, 148	Yünnan, 147, 149, 153
Yarkand, 154	Yünnan-fu, 153
Yarmouth, 53 ; population, 53	
Yarra, 229	
Yassy = Jassy	Zagazig, 162
Yatung, 155	Zagreb, 88
Yellow berries, 24	Zalatna, 90
Yellowhead Pass, 257, 258	Zambezi, 171, 174
Yellow River, 148	Zanzibar, 179
Yellow Sea, 147, 148	Zaragoza, 104
Yemen, 126, 127	Zeebrugge, 64
Yenisei, 118	Zeeland, 65
Yeniseisk, 120	Zeila, 179
Yezo, 155	Zerafshan, 120
Ymuiden, 66	Zimme, 141
Yokohama, 158, 245, 246, 258	Zinc, 29, 63, 71
Yonne, 57	Zlato-ust, 92, 255
York, Cape, 221	Zomba, 178
Yorkshire, 33 ; coalfield, 39	Zuider Zee, 65, 66
Yorkshire, West Riding, 47	Zululand, 170
Yucatan, 22, 204	Zürich, 81
Yuensan, 159	Zwickau, 71 ; population, 74